PORTAL BRIDGE

CAPACITY ENHANCEMENT PROJECT

Final Environmental Impact Statement
and Final Section 4(f) Evaluation

October 2008

U.S. Department of Transportation
Federal Railroad Administration

NJTRANSIT
The Way To Go.

PORTAL BRIDGE CAPACITY ENHANCEMENT PROJECT
HUDSON COUNTY, NEW JERSEY

FINAL ENVIRONMENTAL IMPACT STATEMENT
AND
FINAL SECTION 4(f) EVALUATION

PREPARED BY THE

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL RAILROAD ADMINISTRATION

IN COOPERATION WITH THE

U.S. COAST GUARD, U.S. ENVIRONMENTAL PROTECTION AGENCY,

AND THE

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL TRANSIT ADMINISTRATION

AND THE

NEW JERSEY TRANSIT CORPORATION (NJ TRANSIT)

Submitted pursuant to the National Environmental Policy Act of 1969 (42 U.S.C. §4332 et seq.) and its implementing regulations (40 C.F.R. Parts 1500-1508, 64 FR 28545, and 23 C.F.R. Part 772); National Historic Preservation Act of 1966, §106 (16 U.S.C. §470f); 49 U.S.C. §303 (formerly Department of Transportation Act of 1966, §4(f)); Executive Order 11990 (Protection of Wetlands); Land & Water Conservation Fund Act (16 U.S.C. §§ 4601-4 to 4601-11, formerly Section 6(f)(3) of Public Law 88-578 of 1962); Executive Order 11988 (Floodplain Management); Executive Order 12898 (Environmental Justice); and all applicable laws, regulations, orders, and guidelines.

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ABSTRACT

Amtrak and NJ TRANSIT have proposed the Portal Bridge Capacity Enhancement Project to enhance the capacity and improve the operation of the Portal Bridge, a passenger rail bridge over the Hackensack River. The Federal Railroad Administration (FRA) and NJ TRANSIT have prepared this Final Environmental Impact Statement (FEIS) and Section 4(f) Evaluation for the project. The existing Portal Bridge is a two-track, moveable swing-span bridge between the City of Kearny and the City of Secaucus in Hudson County, New Jersey. It was constructed by the Pennsylvania Railroad and began operation in 1910 as part of a larger project that also included the following elements: New York's original Pennsylvania Station; twin tunnels from Tonnelle Avenue in New Jersey to 9th Avenue in Manhattan; the portion of the Northeast Corridor from Tonnelle Avenue to the former Manhattan Transfer station in Harrison, New Jersey; and electric traction power and signal systems along this segment. These major improvements made possible direct train service between western and southern points on the Pennsylvania Railroad and New York City.

The Portal Bridge is located at Milepost 6.1 along the heavily used "High Line" portion of Amtrak's Northeast Corridor, which connects Newark, New Jersey and New York, New York. The aging Portal Bridge owned by Amtrak is a bottleneck along the Northeast Corridor that conflicts with marine traffic and impedes efficient and reliable passenger rail service. The existing Portal Bridge poses reliability concerns, capacity constraints, and operational inflexibility. This Final Environmental Impact Statement (FEIS) examines four build alternatives, one of which has been identified as the Preferred Alternative, in addition to the "no build" scenario. The build alternatives, which were identified through a comprehensive alternatives development and screening process, involve two new bridges to replace the existing bridge and differ primarily with respect to the location of the southern bridge and the type of grade-separated crossing, either track fly-over or duck-under, included to improve railroad operations.

Considered in the analyses and impact assessments in the FEIS/Section 4(f) Evaluation are the benefits of an improved rail corridor between Swift Interlocking and Secaucus Transfer Station and the potential effects on railway and highway systems, land use and social conditions, historic resources, visual and aesthetic considerations, air quality, noise and vibration, ecology, contaminated materials, coastal zone management, and environmental justice. Conceptual mitigation measures to reduce anticipated localized impacts are discussed in the document.

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✷

Foreword

This Final Environmental Impact Statement (FEIS) is being issued for the Portal Bridge Capacity Enhancement Project, which is proposed by the National Railroad Passenger Corporation (Amtrak) and the New Jersey Transit Corporation (NJ TRANSIT). The Federal Railroad Administration (FRA) and NJ TRANSIT published a Draft Environmental Impact Statement (DEIS) in February 2008 in accordance with the National Environmental Policy Act (NEPA). The DEIS was circulated to all involved and interested agencies, members of the public, and other stakeholders. The public and agency comment period for the DEIS ended on March 31, 2008.

The FEIS responds to all relevant comments made on the DEIS during the comment period, including testimony provided at the March 18, 2008 public hearing. A summary of the comments received and responses to these comments are provided in Chapter 11, "Response to Comments." Individual chapters of the EIS were revised to address the comments where appropriate. Changes and additions to the EIS are indicated by double-underlined text.

The FEIS also reflects refinements to the project design that have been made since publication of the DEIS. These refinements include: a more detailed assessment of the project's construction schedule; a shift in the track centers on the western end of the project area to provide for the future extension of Track 4 west of Swift Interlocking; a substantial reduction in the acreage of wetlands to be filled through the use of elevated structures on the east bank of the Hackensack River and the relocation of a permanent access road; more detailed calculations of shading impacts due to elevated structures; and project costs updated to 2008. Additional information concerning proposed mitigation measures has been included in the FEIS. The FEIS analyzes the results of these project refinements as appropriate. No new significant adverse impacts would be created as a result of these changes; rather, some adverse impacts would be reduced.

Finally, the FEIS includes a comparison of the project alternatives in Chapter 9, "Preferred Alternative." This chapter identifies a preferred alternative based on the project goals and objectives (including operational, engineering, and environmental considerations), construction duration, and project costs. ✷

A. INTRODUCTION

The National Railroad Passenger Corporation (Amtrak) and the New Jersey Transit Corporation (NJ TRANSIT) have proposed to enhance the capacity and improve the operation of the Portal Bridge, a rail crossing over the Hackensack River in Hudson County, New Jersey. The Federal Railroad Administration (FRA) and NJ TRANSIT have prepared this Final Environmental Impact Statement (FEIS) to analyze the potential environmental impacts from the proposed project. FRA is the lead federal agency for this EIS. The Federal Transit Administration (FTA), U.S. Environmental Protection Agency (USEPA), and the U.S. Coast Guard (USCG) are cooperating agencies for the environmental review.

The existing Portal Bridge is a two-track, moveable swing-span bridge that was constructed by the Pennsylvania Railroad (PRR) and began operation in 1910. The aging Portal Bridge, owned by Amtrak, is a bottleneck along the Northeast Corridor that conflicts with marine traffic and impedes efficient and reliable passenger rail service. The Portal Bridge Capacity Enhancement Project FEIS examines four build alternatives in addition to the "no build" scenario and identifies a preferred alternative. The build alternatives, which were identified through a comprehensive alternatives development and screening process, involve two new bridges to replace the existing bridge. They differ primarily with respect to the location of the southern bridge and the type of grade-separated crossing, either track fly-over or duck-under, included to improve railroad operations. Revenue service would begin between 2017 and 2019, depending on the build alternative. As shown in Figure S-1, the study area for the project extends east to west from Secaucus Transfer Station (also known as the "Frank R. Lautenberg Station" or "Secaucus Junction") to Kearny Junction Interlocking and north to south 2,000 feet from the Northeast Corridor.

The Northeast Corridor is the most heavily used passenger rail line in the U.S., both in terms of ridership and service frequency.[1] The Northeast Corridor extends from Washington, D.C. in the south to Boston, Massachusetts in the north, serving the densely populated northeast region, including Pennsylvania Station in New York City (PSNY). Amtrak, the nationwide inter-city passenger rail operator, owns much of and operates over all of the Northeast Corridor. Amtrak carries approximately 15,700 passengers each day in each direction over the Portal Bridge, including 3,900 passengers per day on the time-sensitive premium Acela Express service. NJ TRANSIT carries an average of 150,000 passengers per day in both directions over the Portal Bridge on almost 350 trains (not including non-revenue trains that are not available to the public for transportation).

[1] Source: BGL Rail Associates, for the Amtrak Reform Council, *A Recommended Approach to Funding the Estimated Capital Investment Needs of the Northeast Corridor Rail Infrastructure*, April 2002.

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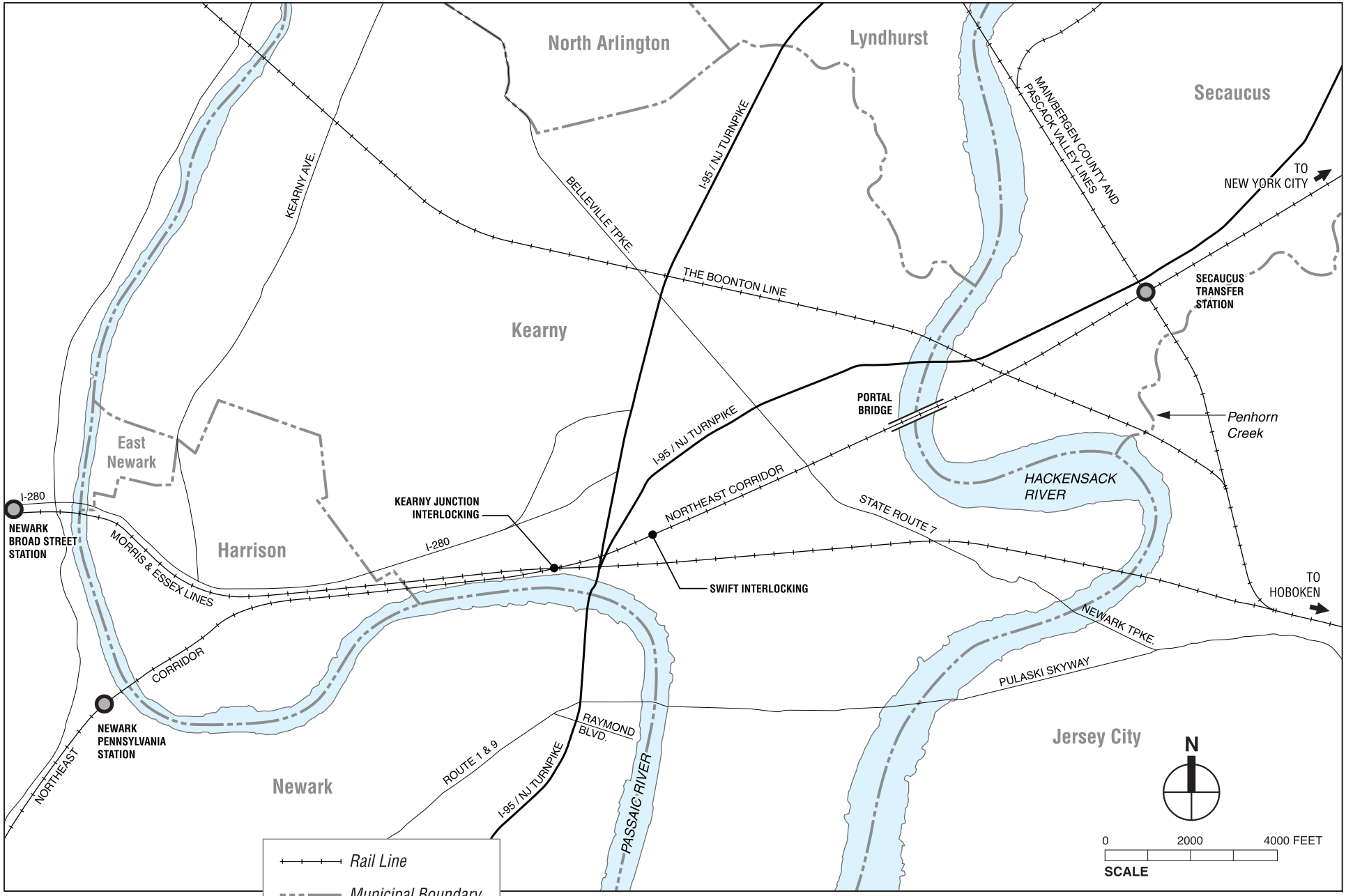

NJ TRANSIT
PORTAL BRIDGE CAPACITY ENHANCEMENT PROJECT

Project Study Area
Figure S-1

B. PURPOSE AND NEED

The Portal Bridge is a critical infrastructure element for Amtrak and NJ TRANSIT, enabling movement between destinations east and west of the Hudson River. The existing Portal Bridge, however, poses reliability concerns, capacity constraints, and operational inflexibility. *The purpose of the project is to replace the nearly 100-year-old Portal Bridge and eliminate capacity constraints on the Northeast Corridor between Swift Interlocking and Secaucus Transfer Station.*

PROBLEM IDENTIFICATION AND NEED

AGING AND LIMITING INFRASTRUCTURE

The existing Portal Bridge was constructed nearly a century ago. Given the Portal Bridge's age, the structure is nearing the end of its economic life. The existing Portal Bridge presents a considerable ongoing operation and maintenance expense for Amtrak because the mechanical and structural components are prone to failure due to age and wear.

In addition to the age of the Portal Bridge, several aspects of the bridge's design are problematic. The middle span is a 300-foot-long moveable swing-span and is able to pivot to an open position to allow marine traffic to pass. When the swing-span is open, the bridge is closed to train traffic. Special rail connections, known as "miter rails," allow the rails to disengage and the bridge to open and close. The miter rail connections have been an ongoing problem since the Portal Bridge was constructed, and the connections have been replaced several times. While trains can operate at 90 miles per hour (mph) on adjacent portions of the Northeast Corridor, speeds on the Portal Bridge have been permanently restricted to 60 mph. The bridge openings required to accommodate marine traffic increase the likelihood of mechanical malfunctions, which have in the past caused the bridge to remain in the open position for long periods of time.

CAPACITY CONSTRAINTS AND OPERATIONAL INFLEXIBILITY

The two-track configuration of the Portal Bridge and the speed restrictions discussed above limit the number of trains that can cross the Hackensack River, which is especially problematic during peak commuter hours. The Northeast Corridor has two tracks between Swift Interlocking (the point where MidTOWN Direct trains merge onto the Northeast Corridor, as shown in Figure S-2) and Secaucus Transfer Station (the point where six NJ TRANSIT lines intersect). Because multiple rail lines and different train types operated by NJ TRANSIT and Amtrak are merging onto a two-track bridge crossing, the window of opportunity for each train is reduced. This operational inflexibility means that a delay on one rail line can cascade to other rail lines. A January 2006 analysis revealed that, on average, an additional four to five trains were subsequently delayed due to an initial interruption in service. Frequent bridge openings exacerbate the current operational inflexibility.

MAINTENANCE DIFFICULTIES

The complexity of the swing bridge with the miter rail configuration and the level of train traffic require vigilant maintenance and inspection of the Portal Bridge, especially the connections between the bridge and adjacent track. The current level of train traffic over the bridge leaves few windows of opportunity for maintenance and inspection activities to be performed. Sections of track must be taken offline to perform these tasks. To avoid disruption to passenger service,

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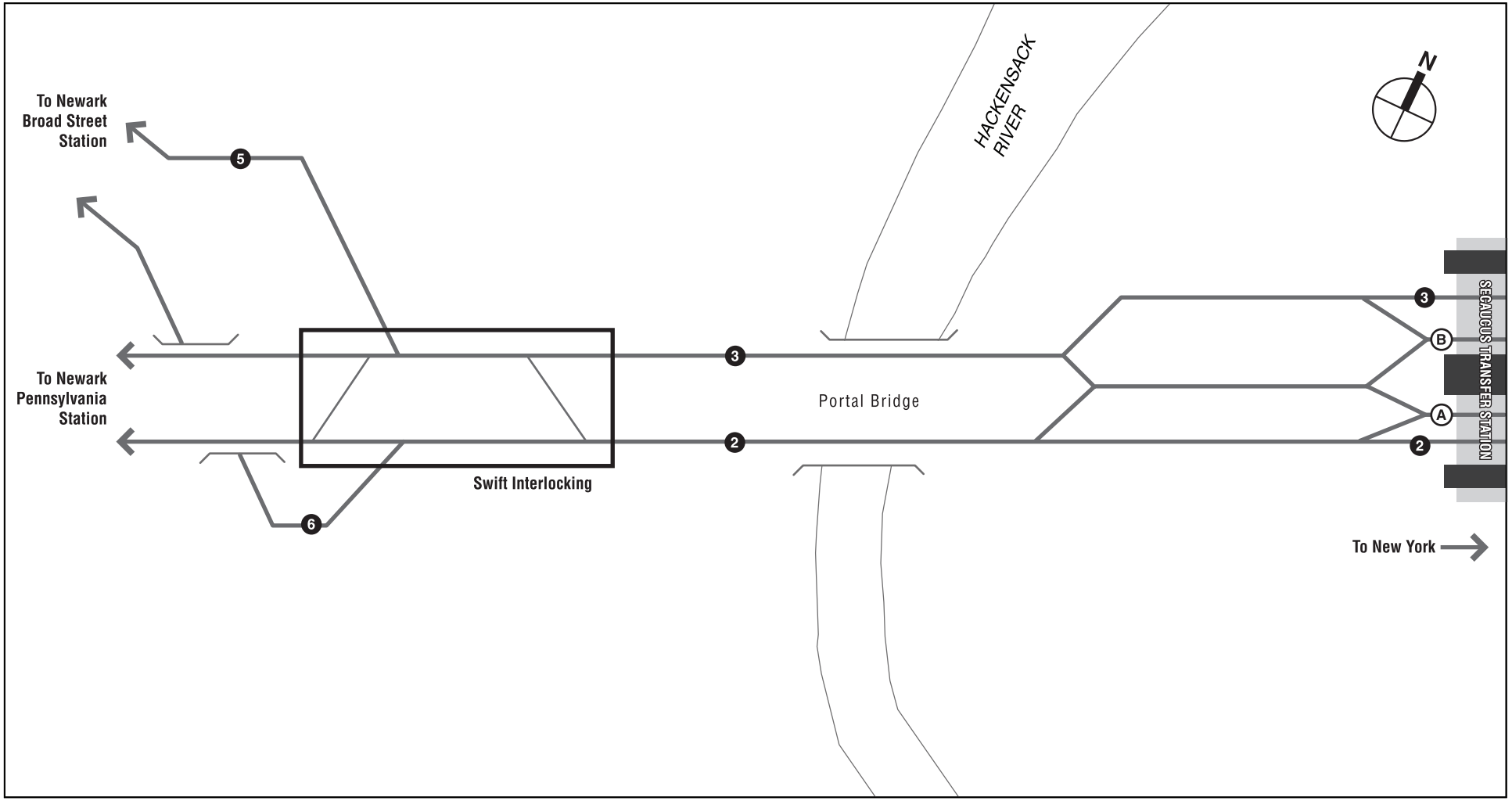

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Existing Track Schematic

Figure S-2

Amtrak is forced to conduct maintenance and inspection during increasingly limited time periods, such as at night and on weekends. This results in high costs from increased labor premiums for night and weekend work, and reduced productivity rates due to the small work windows. Often, if a component fails during the day, trains are forced to operate slower than usual through peak period operations until the following night when a section of track can be removed from service.

CONFLICTS WITH MARITIME USES

The existing Portal Bridge has only 23 feet of clearance between mean-high-water (MHW) and the lowest steel elevation of the bridge. As a result, the Portal Bridge is opened frequently to accommodate individual marine vessels, thereby disrupting Northeast Corridor train traffic. To assess the existing marine traffic, Portal Bridge data logs from April 2004 to April 2006 were examined. During that two-year period, there were 663 bridge openings. The average vertical clearance needed for those vessels that required a bridge opening was 27 feet. The smallest vertical clearance required by a particular vessel was 18 feet and the greatest vertical clearance required was 49 feet. This conflict is currently managed by restricting the times during which the bridge is permitted to open. Additionally, bridge malfunctions can cause delays that cascade from the non-peak period into the peak period. As the most heavily traveled rail line in the U.S. (as measured by number of daily train movements), trains are carefully scheduled going into and out of New York City to correspond to the capacity of the existing track and signal system infrastructure and the platform capacity at PSNY. Delays to rail traffic (even as short as two to three minutes) can cause trains to fall irrecoverably behind schedule. This is because some trains are scheduled as closely as two minutes apart. Once a train falls behind schedule or "out of slot," that delay can cascade to one or more following trains. Depending on the timing and duration of the delay, and the direction of the affected train(s), it can be impossible to fully recover from the delay until the peak period has ended. These delays have the potential to affect both Amtrak and NJ TRANSIT's most time-sensitive riders.

PROJECT GOALS AND OBJECTIVES

The purpose of the project is to replace the nearly 100-year-old Portal Bridge and eliminate capacity constraints on the Northeast Corridor between Swift Interlocking and Secaucus Transfer Station. To compare and contrast the project alternatives developed as part of the EIS process, specific project goals and objectives have been identified. Six goals have been established for the Portal Bridge Capacity Enhancement Project, relating to capacity, reliability, safety, compatibility, cost-effectiveness, and environmental considerations. The six project goals are as follows:

GOAL 1: Enhance capacity to meet current and future demand—including new service—along the Northeast Corridor.

GOAL 2: Improve service reliability and operational flexibility.

GOAL 3: Provide a redundant Hackensack River crossing to facilitate maintenance and enhance passenger safety and security.

GOAL 4: Minimize conflicts with maritime traffic.

GOAL 5: Optimize existing infrastructure and planned improvements.

GOAL 6: Minimize impacts on the surrounding environment.

C. PROJECT ALTERNATIVES

The project alternatives include several build alternatives in addition to a "no build" scenario (the "No Action Alternative"), wherein none of the project elements would be constructed and the existing Portal Bridge would remain in place. The build alternatives for the Portal Bridge Capacity Enhancement Project were identified through a comprehensive alternatives development and screening process that included considerable input from stakeholders and the public. The Access to the Region's Core (ARC) project is an independent rail infrastructure project undergoing a separate environmental review that is not included in the No Action Alternative for the Portal Bridge project. The ARC project was considered in the development of the feasible Portal Bridge build alternatives and is considered for its potential to cause cumulative effects.

NO ACTION ALTERNATIVE

The No Action Alternative consists of the transportation facilities most likely to be in place by 2030. The No Action Alternative assumes that the existing two-track swing-span Portal Bridge would remain in place and would be subject only to regular maintenance. The No Action Alternative also takes into account planned improvements that have recently been completed or are programmed for completion in the near future, as well as planned improvements that are included in the long-range regional transportation plan.

MAJOR PLANNED PROJECTS

Access to the Region's Core (ARC)

NJ TRANSIT, in partnership with the Port Authority of New York and New Jersey (PANYNJ) issued a Draft EIS in February 2007 and a Supplemental Draft EIS in March 2008 for the ARC project. This project is particularly relevant to the Portal Bridge project since the ARC project would result in additional trains traversing the Portal Bridge. Amtrak and NJ TRANSIT's 2030 Operating Plan (which includes the ARC project), projects additional trains traveling to the combined New York Pennsylvania Station (PSNY)/New York Pennsylvania Station Expansion (NYPSE) in the AM peak hour, as compared to existing 2006 conditions. This will result in a total of 48 Amtrak and NJ TRANSIT trains traveling to PSNY/NYPSE in the AM peak hour and a net increase of 16 trains over the Portal Bridge (i.e., from 23 to 39). Because the Portal Bridge Capacity Enhancement Project is independent of the ARC project, the analysis of the proposed alternatives and their potential environmental effects reflect future conditions without the ARC project. However, the ARC project was considered in the development of the feasible Portal Bridge build alternatives and is considered for its potential to cause cumulative effects.

Other Projects

Other major projects in the No Action Alternative include: Newark Pennsylvania Station Improvements; Farley Post Office/Moynihan Station Development Project; New Yard Capacity in the Vicinity of New York Pennsylvania Station; New York Pennsylvania Station Capacity Enhancements; Introduction of Bi-Level Cars to NJ TRANSIT; and the Wittpenn Bridge Replacement.

BUILD ALTERNATIVES

The *Scoping Document* (December 2006) presented general categories of project alternatives that were planned for consideration, including alternatives that would retain, replace, or modify the existing Portal Bridge. The results of the alternatives development process were presented in the *Alternatives Screening Report* (July 2007). The *Alternatives Screening Report* concluded with identification of two feasible alternatives: (1) construction of a two-track moveable bridge on a new southern alignment and construction of a three-track fixed bridge on a new northern alignment; and (2) construction of a two-track moveable bridge on the existing Portal Bridge alignment and construction of a three-track fixed bridge on a new northern alignment. Subsequent to the *Alternatives Screening Report*, these two alignment alternatives were evaluated more closely for engineering, operational, and environmental feasibility, as well as for connectivity with the ARC project.

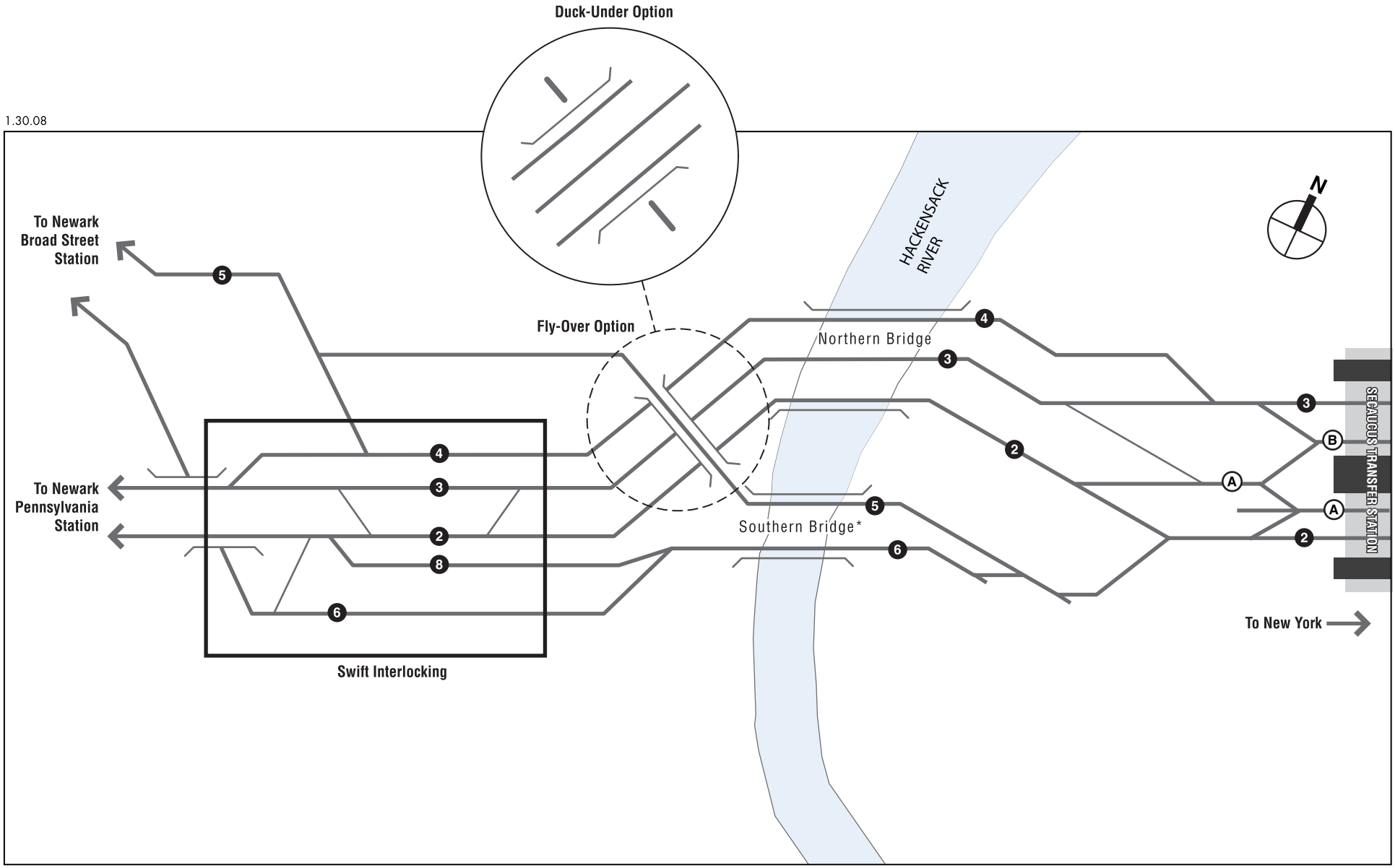
All of the build alternatives would include the decommissioning and removal of the existing Portal Bridge, in addition to the following project elements:

- Construction of a new three-track fixed northern bridge at a height of 50 feet above MHW and related approach structures. This 1,106-foot long bridge would consist of three spans with a 300-foot navigable channel.
- Construction of a new two-track moveable southern bridge at a height of 40 feet above MHW and related approach structures. The main span would be a vertical lift through truss and the two flanking side spans would be simply-supported fixed-span through trusses.
- A new track configuration between Swift Interlocking and Secaucus Transfer Station, including a grade-separated crossing of the Northeast Corridor.
- New ancillary equipment such as signal and communication systems, traction power supply and distribution, and catenary and communication support structures, as required.
- New rail bridges over Newark Turnpike, former Erie Newark-Paterson Branch right-of-way, Belleville Turnpike, former Erie Arlington Branch right-of-way, and the Boonton Line.[1]

Any of the four build alternatives would require reconfiguration of the existing track connections between Swift Interlocking and Secaucus Transfer Station. As shown in Figure S-3, the reconfiguration would include:

- Removal of the current two-track bottleneck by providing a minimum of four tracks between Secaucus Transfer Station and Swift Interlocking.
- A grade-separated crossing of Track 5 over or under the Northeast Corridor, to be used temporarily for construction staging and permanently for additional connectivity between the Morris & Essex Line and the Northeast Corridor. The grade-separated crossing is also required so as not to preclude ARC, which would require westbound Morris & Essex Line trains to platform on the south side of Secaucus Transfer Station.
- New track and crossovers that would allow for the normal operation of trains through the corridor.

[1] The Boonton Line, which is owned by Norfolk Southern, is also known as NJ TRANSIT's former Boonton Line or the Erie Railroad's Greenwood Lake Line. Apart from historic references in Chapter 5.2, "Historic Resources," it will be referred to as "the Boonton Line" in this document.



*Southern bridge is shown on existing alignment. In alternatives where the southern bridge is built off-alignment, it would be located farther to the south.

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Proposed Track Schematic

Figure S-3

DESCRIPTION OF ALTERNATIVES

The four build alternatives differ primarily in two respects: the location of the southern bridge and the type of grade-separated crossing provided for Track 5. For purposes of nomenclature, the four build alternatives are referred to in this EIS as follows:

- **Preferred Alternative DS.** This alternative, discussed below as the preferred alternative, includes a three-track fixed northern bridge, a two-track moveable southern bridge built on a new southern alignment, and a duck-under structure for Track 5;
- **Alternative DE.** This alternative includes a three-track fixed northern bridge, a two-track moveable southern bridge built on the existing alignment, and a duck-under structure for Track 5;
- **Alternative FE.** This alternative includes a three-track fixed northern bridge, a two-track moveable southern bridge built on the existing alignment, and a fly-over structure for Track 5;
- **Alternative FS.** This alternative includes a three-track fixed northern bridge, a two-track moveable southern bridge built on a new southern alignment, and a fly-over structure for Track 5.

As described in Chapter 3, "Project Alternatives," the tracks would be supported by different methods depending upon local conditions. A variety of methods is proposed including earthen embankments, retaining walls, short span girder bridges, and long span truss bridges. Wherever feasible and cost-effective, the support methods along each segment were selected to minimize the potential environmental and property impacts. The build alternatives are described below by geographic section, as shown in Figure S-4.

SECTION 1 – NEW JERSEY TURNPIKE TO NEWARK TURNPIKE

All four build alternatives would have the same track alignment in this section. This section would comprise five main tracks—Track 5 to the north, Track 6 to the south, and Tracks 2, 3, and 4 in the center. All tracks would be constructed on a retained embankment to reduce the effects on wetlands north and south of the existing Northeast Corridor. The majority of work in Section 1 would occur within the existing Amtrak right-of-way.

SECTION 2 – NEWARK TURNPIKE TO FORMER ERIE NEWARK-PATERSON BRANCH

Similar to Section 1, this section would include Track 5 to the north, Track 6 to the south, and Tracks 2, 3, and 4 in the center. Alternatives FE and FS would extend farther to the north in this section due to the approach required for the fly-over structure. Between the DEIS and the FEIS, the track alignment in this area was revised so as not to preclude the possible future extension of Track 4 west of Swift Interlocking. This resulted in a shift of the Alternatives DE and DS alignments further north in this section. Therefore, all four alternatives would extend beyond the northern boundary of the right-of-way and require property acquisition (discussed further in Chapter 5.1, "Land Use and Social Conditions") of an industrial building between Newark Turnpike and the former rail right-of-way. Alternatives FE, FS, and DS would extend beyond the northern boundary of the right-of-way and require property acquisition. Alternative DE may require use of this property to the north of the existing Northeast Corridor for construction staging. To the south, the embankment would remain within the existing right-of-way, although it would encroach upon an area currently leased by Amtrak to a private entity.

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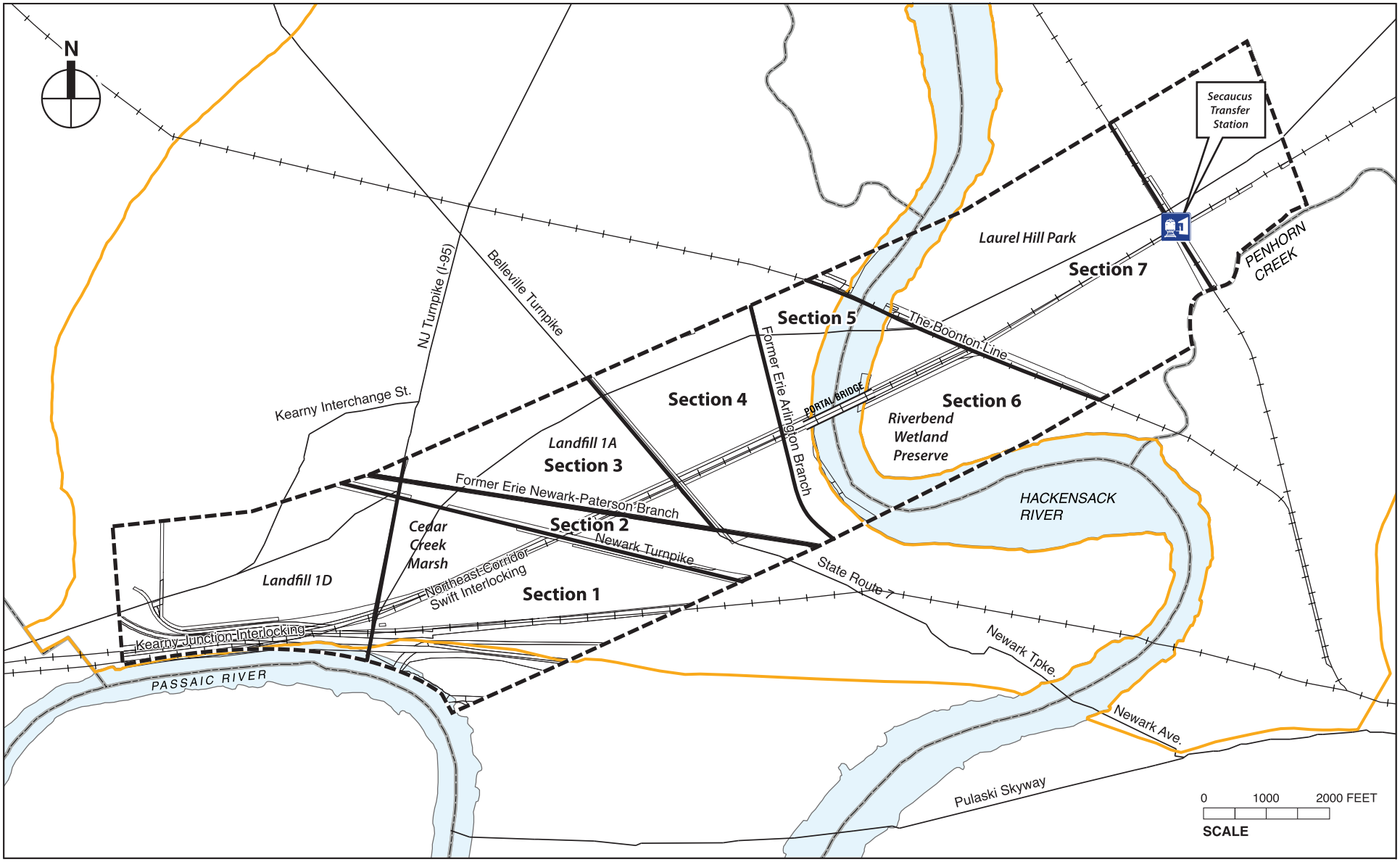

Study Area

NJMC District Boundary

NJ TRANSIT
PORTAL BRIDGE CAPACITY
ENHANCEMENT PROJECT

Alternatives by Geographic Section

Figure S-4

SECTION 3 – FORMER ERIE NEWARK–PATERSON BRANCH TO BELLEVILLE TURNPIKE

Similar to Sections 1 and 2, this section would include Track 6 to the south and Tracks 2, 3, and 4 in the center. Track 8, a pocket track (which allows trains merging from one track to another to wait for an available space without impeding other traffic) connecting the Northeast Corridor to the southern bridge, would also be constructed between Tracks 6 and 2 in this section. The grade-separated crossing for Track 5 would be partially located within this section. Alternatives FE and FS would include an embankment to the north and a bridge across the open water area to the east of the landfill. To the south, Alternatives FE and FS would include an embankment with a retaining wall in the area near the Belleville Turnpike to avoid property impacts.

Alternatives DE and DS would include an embankment to the north (and would also require acquisition of a portion of the former landfill), and an embankment with a retaining wall along the open water area. To the south, Alternative DE would include an embankment, while Alternative DS would include a combination of embankment and embankment with a retaining wall. For all four alternatives, property acquisitions would be required for the former landfill and open water areas. To the south, construction would be confined to the existing Amtrak right-of-way, but may affect existing lessees of Amtrak property.

SECTION 4 – BELLEVILLE TURNPIKE TO FORMER ERIE ARLINGTON BRANCH

In Section 4, the northernmost tracks would be Tracks 4, 3, and 2 (respectively from the north) and Track 6 would be the southernmost track. Track 5 would cross Tracks 4, 3, and 2 within this section via the fly-over or the duck-under structure. For all four alternatives, the portions of Tracks 4, 3, and 2 within this section would be built on a combination of embankment and retained embankment. Track 6 would be constructed on an embankment. Some construction within Section 4 would be outside of Amtrak's existing right-of-way. For all four alternatives, acquisition of an industrial property (to the north) would be required and a property leased from Amtrak to a private party may be affected. Alternatives DS and FS would also require acquisition of a portion of the vacant Diamond Shamrock property to the south.

SECTION 5 – FORMER ERIE ARLINGTON BRANCH TO HACKENSACK RIVER

All four alternatives would be largely the same within Section 5. Tracks 2, 3, and 4 would be built on a structure and connect to the northern fixed bridge. Tracks 5 and 6 would be constructed on an embankment and would connect to the southern moveable bridge. The northern tracks would be constructed within Amtrak's existing right-of-way. For Alternatives DE and FE, the southern tracks would be built within the existing right-of-way, although Alternative FE would require a portion of this property for construction staging. Alternatives DS and FS would require acquisition of a portion of the adjacent vacant Diamond Shamrock property for construction of a new embankment and related infrastructure.

HACKENSACK RIVER

In all alternatives, the northern tracks (Tracks 2, 3, and 4) would cross the Hackensack River on a fixed steel truss bridge 50 feet above MHW. The southern tracks (Tracks 5 and 6) would cross the river on a moveable lift bridge 40 feet above MHW located either on or south of the alignment of the existing bridge.

SECTION 6 – HACKENSACK RIVER TO THE BOONTON LINE

In Section 6, all alternatives would consist of three tracks to the north (Tracks 2, 3, and 4) and two tracks to the south (Tracks 5 and 6). Midway between the Hackensack River and the Boonton Line, there would be a crossover between Tracks 5 and 6. Approximately 150 feet west of the Boonton Line, a connecting track between Tracks 5 and 2 would diverge off of Track 2. Approximately 300 feet to the west of the Boonton Line, Track A would begin to diverge off of Track 2 in all alternatives. For all four alternatives, Tracks 2, 3, and 4 would be built on an elevated multi-span structure that would essentially be an extension of the main river crossing. For Alternatives DS and FS, Tracks 5 and 6 would be built on an elevated structure to minimize impacts to the adjacent wetlands. To further minimize impacts on the adjacent wetlands, the permanent access road would be located on the existing embankment (in the DEIS, this access road was located in the Riverbend Wetland Preserve). Alternatives DE and FE would not require a structure in this area since Tracks 5 and 6 would be located on a retained embankment within the existing Amtrak right-of-way. These alternatives would require some additional fill in the adjacent wetlands since the existing access road would be eliminated by the expanded embankment in this area. The permanent access road would be within Amtrak's current right-of-way and no additional property would be required to the south.

All four alternatives would require property acquisition of a portion of the newly expanded Hudson County Park at Laurel Hill north of Amtrak's existing right-of-way. In addition, Alternatives DS and FS would require property acquisition to the south of the existing right-of-way. All four alternatives would include new structures over the right-of-way of the Boonton Line.

SECTION 7 – THE BOONTON LINE TO SECAUCUS TRANSFER STATION

The western portion of Section 7 would include Tracks 2, 3, 4, A, 5, 6 and a connecting track between Tracks 5 and 2. Tracks 4 and 3 would merge midway between the Boonton Line and Secaucus Transfer Station. Track A would continue into Secaucus Transfer Station. The connecting track between Tracks 5 and 2 would merge with Track 2 near Secaucus Transfer Station. Tracks 5 and 6 would continue a short distance over the Boonton Line and stub-end, providing for emergency storage of disabled trains. All four alternatives would include a retaining wall to the north and an embankment to the south within the existing right-of-way.

CAPITAL COSTS

The estimated capital costs, which have been updated for the FEIS, for each build alternative are shown in Table S-1. Alternatives DS and FS are more expensive than Alternatives DE and FE due mostly to the increased costs associated with the additional structures required within the Riverbend Wetland Preserve.

PERMITS REQUIRED

All of the build alternatives would require a number of permits and approvals at the federal, state, and local levels, as shown in Table S-2.

PREFERRED ALTERNATIVE

As discussed in more detail in Section Q and Chapter 9, "Preferred Alternative," the project sponsors have identified Alternative DS as the preferred alternative.

Table S-1
Capital Cost—Build Alternatives (in Millions)

Cost Type	DS	DE	FE	FS
Guideway	$551	$503	$515	$549
Track	$26	$25	$26	$27
Site/Civil	$152	$150	$160	$159
Systems	$66	$63	$65	$68
ROW Costs	$15	$7	$13	$16
Soft Costs	$317	$295	$303	$319
Unallocated Contingency	$159	$148	$153	$160
Finance Charges	$58	$52	$55	$58
Total	$1,344	$1,243	$1,290	$1,356

Notes: All costs in 2007 dollars with costs escalated to 2008 dollars under finance charges. Guideway includes all track support structures including bridges, abutments, and foundations but not embankment which is included in Site/Civil. Site/Civil includes transport and disposal of contaminated materials and wetland mitigation. Soft costs include engineering, project and construction management, insurance, legal and force account labor.

Table S-2
List of Potential Federal, State, and Local Permits

Permits/Certifications	Responsible Agency	Activity
Federal		
Section 404 Permit	USACOE	Discharge of dredged or fill material into the waters of the U.S.
Section 10 Permit	USACOE	Construction of structures in navigable waters
Section 9 Permit	USCG	Construction over navigable waters
Hazards to Navigation Assessment	USCG	Obstructions in navigable waters
State		
401 Water Quality Certificate	NJDEP	Discharges to surface waters
Waterfront Development/ Coastal Wetlands Permit	NJDEP	Coastal development
Flood Hazard Area Individual Permit	NJDEP	Construction in riparian zone and Flood Hazard Area
Tidelands Conveyance	NJDEP	Activities that affect tidal wetlands
Diversion/Disposal of Parkland	NJDEP	Development in parkland
Sanitary Landfill Disruption Permit	NJDEP	Disturbance of a landfill
NJPDES	NJDEP	Discharge into Surface Waters
Site Remediation Approval	NJDEP	Approval of the remediation of contaminated sites
Soil Erosion and Sediment Control Plan Certificate	New Jersey Natural Resources Conservation Program	Land disturbance from construction activities

Note: Other permits and approvals from Hudson County and the New Jersey Meadowlands Commission may be required.

D. TRANSPORTATION EFFECTS

The Portal Bridge Capacity Enhancement Project considers multiple build alternatives for increasing trans-Hackensack River capacity and improving rail operations along the Northeast Corridor between Swift Interlocking and Secaucus Transfer Station. These alternatives would, for the most part, provide for similar transportation benefits to both NJ TRANSIT and Amtrak through the project area and improving travel between Newark Pennsylvania Station (NPS) and Secaucus Transfer Station. However, without an associated expansion of capacity from Secaucus Transfer Station to New York City, neither NJ TRANSIT nor Amtrak would be able to increase the number of trains they operate on the Northeast Corridor in peak periods.

INTERCITY RAIL

With the proposed project, Amtrak service would no longer be affected by the reliability concerns that are presented by the existing Portal Bridge. Northeast Corridor train traffic would no longer be interrupted by bridge openings due to marine traffic or by mechanical or electrical failures to the existing bridge's machinery. Construction of a grade-separated junction between the Northeast Corridor and the proposed southern alignment at the current site of Swift Interlocking would improve operations through this area by greatly reducing the number of merging and diverging train movements that presently occur each day. Increased reliability and speeds for Amtrak on the Northeast Corridor would enable its service to become a more dependable option for short and medium distance trips in the region that are now being made by air. This would also to some extent relieve the region's heavily congested airports.

PUBLIC TRANSPORTATION

Much like Amtrak trains, NJ TRANSIT service would no longer be subject to the reliability concerns presented by the existing Portal Bridge. Trains destined for New York City would operate via either a new fixed bridge, which would require no openings for marine traffic, or a moveable bridge, which would need to open for a small portion of the existing marine traffic. When openings would occur, the cycle time of an opening would be shorter and much more reliable than the current situation. Thus, the build alternatives would have a positive effect on Amtrak's and NJ TRANSIT's rail operations. Moreover, the construction of additional tracks between Swift Interlocking and Secaucus Transfer Station would eliminate certain existing merge points and improve the overall operations of the Northeast Corridor.

NAVIGABLE WATERS

Construction of any one of the build alternatives would result in the removal of the existing Portal Bridge and its replacement with a new bridge 40 feet above MHW either on the existing alignment or to the south. The build alternatives would also result in the construction of a new fixed bridge at 50 feet above MHW to the north of the existing Portal Bridge. Construction of these two bridges at higher levels above MHW would reduce the number of instances when marine traffic would have to request a bridge opening. In all cases, the build alternatives would include the removal of the existing bridge and removal of its center pier, which would provide for a 300-foot-wide, uninterrupted horizontal clearance across the river channel. This would result in a substantial improvement over the existing Portal Bridge in terms of navigability of the river.

REGIONAL HIGHWAY SYSTEM

The build alternatives would improve rail service but would not measurably reduce vehicle miles traveled (VMT) in the region. Thus the project would not impact the regional highway system.

E. LAND USE AND SOCIAL CONDITIONS

LAND USE

Overall, the build alternatives would not result in substantial adverse impacts to land use in the study area. All four build alternatives would continue an existing land use that is dominant through the center of the study area, the rail right-of-way. Upon completion of the new bridge, train service would continue to operate as it does today with projected improvements to train capacity and efficiency. The proposed project would increase reliability and would specifically improve the commute of area residents traveling to New York City. All four would require some widening of the right-of-way and construction of new bridges and other rail infrastructure, but this would not change the land use or land use patterns in the study area. The rail corridor would continue to be consistent with the heavy industrial, transportation, and intermodal uses common in the study area.

PROPERTY ACQUISITIONS

All four build alternatives would require acquisition of some land adjacent to the existing Northeast Corridor right-of-way to accommodate the new construction. Most of the acquisition required would constitute only a small portion of each affected property. Alternative FS would potentially require the greatest amount of property acquisition (45.4 acres), followed by Alternative DS (41 acres), FE (29.2 acres), and DE (24.2 acres). Alternative DE would require the acquisition of far less property than the other build alternatives (20.1 acres). All four build alternatives would require acquisition in full of an 11.1-acre industrial parcel on the north side of the Northeast Corridor right-of-way, and all but Alternative DE would also require acquisition in full of a 4-acre industrial parcel on the north side of the right-of-way, although this property may be acquired for construction staging.

All property owners and tenants on the parcels of land to be acquired for the construction of the selected alternative would be fairly compensated for their property. The rights of owners and tenants of any real property acquired to implement the proposed project are protected under the federal Uniform Relocation Assistance and Real Property Acquisition Policies Act, which provides for fair, uniform, and equitable treatment of people displaced from their businesses by federal and federally assisted programs.

The Green Acres Program is administered by NJDEP and was established to help ensure that there is access to and an adequate supply of public open space and conservation areas of natural resources in the State of New Jersey. In addition to adhering to the Green Acres Program regulations, appropriate mitigation of affected parkland will be developed in conjunction with Hudson County, the NY/NJ Baykeeper, the New Jersey Meadowlands Commission (NJMC), and other stakeholders. Similarly to other permits and regulatory approvals, the formal diversion process would begin after issuance of the FRA's Record of Decision.

ZONING AND PUBLIC POLICY

All build alternatives would support one of the key goals of the NJMC Master Plan and other policies for the Meadowlands District: by improving public transportation infrastructure through the study area, the build alternatives would contribute to creation of a well-integrated multi-modal transportation network. At the same time, however, some of the property acquisitions required for the build alternatives would be inconsistent with public policies for the area. Specifically, the conversion of small areas of land designated for park and wetlands uses would be inconsistent with NJMC's policies to support and enhance open space and wetland areas within the Meadowlands District.

PARKLAND AND OPEN SPACE

The build alternatives would require an increase to the size of the existing rail right-of-way through the study area and this would involve acquisition and conversion to transportation use of narrow areas of parkland and wetland preserve along the existing right-of-way. In addition, several of the affected parks and preserved areas would be encumbered by the Green Acres Program. NJ TRANSIT and Amtrak have initiated the process of mitigation of the affected parkland and open space through discussion with all involved parties. Effects on specific parks and preserve areas would be as follows.

- **Cedar Creek Marsh:** Alternatives FE and FS would require acquisition of a narrow strip of Cedar Creek Marsh immediately adjacent to the existing rail right-of-way to accommodate a track connection associated with the flyover. Based on discussions to date, this wetland preserve may be encumbered by the Green Acres Program.
- **Kearny Brackish Marsh (including Cayuga Dike):** All four build alternatives would also require acquisition of 2.5 acres of the Kearny Brackish Marsh/Cayuga Dike to accommodate bridge piers supporting a viaduct above the preserve.
- **Riverbend Wetland Preserve:** The two southern alignment alternatives, Alternatives FS and DS, would require acquisition of a 4.7-acre portion of this wetland preserve to accommodate an overhead viaduct supported on piers. The piers would be located within, but would not occupy all of, the 4.7 acres to be acquired. Based on discussions to date, this preserve would not be encumbered by the Green Acres Program.
- **Hudson County Park at Laurel Hill:** All four build alternatives would require the acquisition of 2.0 acres of the 14.9-acre area (which is conceptually planned for an expansion of Laurel Hill Park) to accommodate the approach to the new northern bridge. This parcel of land was purchased by Hudson County and the NY/NJ Baykeeper under the Green Acres Program, and therefore, mitigation of this loss of parkland requires special coordination with NJDEP. NJ TRANSIT and Amtrak have also initiated discussion with Hudson County and the NY/NJ Baykeeper on potential measures to mitigate the loss of this parkland including possible sites for compensatory parkland and/or open space as well as physical improvements (i.e., access, recreational or infrastructure facilities, etc) at the existing and future Laurel Hill Park. Other possible areas for open space mitigation include opportunities for the project to provide waterfront access to the west side of the Hackensack River. The project sponsors will continue to work with the county and other stakeholders on these various potential mitigation measures as the Portal Bridge Capacity Enhancement Project proceeds into preliminary engineering allowing for a more refined design of the areas surrounding the bridge structures.

F. HISTORIC RESOURCES

ARCHAEOLOGICAL RESOURCES

All of the build alternatives involve modification of portions of the Northeast Corridor within the archaeological Area of Potential Effect (APE). Portions of the area sensitive for human remains and funerary archaeological artifacts relating to the Historic Cemeteries of Hudson County could be disturbed by the proposed demolition and reconstruction of the Northeast Corridor in Secaucus. At this stage in the project, detailed plans for the extent of subsurface disturbance are not available, and therefore the potential effects of the construction on the Historic Cemeteries of Hudson County area of archaeological sensitivity cannot yet be fully determined. As described in Chapter 5.2, "Historic Resources," a Memorandum of Agreement (MOA) among FRA, New Jersey Historic Preservation Office (NJHPO), Amtrak, and NJ TRANSIT has been prepared to address the next steps in the process. Since all four of the build alternatives (Alternatives DE, FE, FS, and Preferred Alternative DS) would result in the same adverse effects, the executed MOA applies to all of the alternatives. If it is determined that the project will affect the Historic Cemeteries of Hudson County, the project sponsors will prepare a disinterment/re-interment plan, make a reasonable and good faith effort prior to any excavation to disinter remains to locate and contact any lineal descendents, have a physical anthropologist/forensic archaeologist on site, and comply with the New Jersey Cemetery Act. Once the project sponsors determine that all remains have been properly exhumed, they will proceed with construction. Subsequent to disinterment and re-interment, Amtrak and NJ TRANSIT shall provide a technical report to FRA and NJHPO.

ARCHITECTURAL RESOURCES

All of the build alternatives would have an adverse effect on the Portal Bridge (State Register [SR]-listed; National Register [NR]-eligible), since all of the alternatives would result in its decommissioning and removal. As set forth in the MOA, ongoing consultation would be undertaken among NJHPO, FRA, Amtrak, NJ TRANSIT, and the public as project engineering proceeds to identify measures to minimize or mitigate the adverse effects to the Portal Bridge.

All of the build alternatives are expected to result in modifications of the Northeast Corridor (a.k.a. Pennsylvania Railroad Historic District [S/NR-eligible]) within the APE. While the Pennsylvania Railroad Historic District retains historic integrity overall, it should be noted that the historic district in the study area has undergone extensive alterations since the time of its S/NR eligibility determination in 1978. In light of the extensive recent alterations to the fabric and appearance of the Pennsylvania Railroad Historic District in the study area, the anticipated effects of the proposed project would be adverse insofar as they would add to the cumulative alterations of the resource's original fabric and appearance that have occurred in the study area in recent decades. As stated above, ongoing consultation would be undertaken among NJHPO, FRA, Amtrak, NJ TRANSIT, and the public as project designs progress, to identify measures to minimize or mitigate the potential for adverse effects to the Pennsylvania Railroad New York to Philadelphia Historic District (referred to herein as the Pennsylvania Railroad Historic District).

As part of all the build alternatives, construction would occur in the immediate proximity of the Jersey City Waterworks Pipeline (S/NR-eligible) and Substation 4 (S/NR-eligible), and therefore could result in accidental damage to the resources. Ongoing consultation will be undertaken among FRA, NJHPO, Amtrak, NJ TRANSIT, and the public as project designs progress, to avoid or minimize the potential for adverse effects on the Jersey City Waterworks Pipeline and

Substation 4. Amtrak and NJ TRANSIT, in consultation with FRA and NJHPO, will develop a Construction Protection Plan for Historic Properties. The Construction Protection Plan would set forth the specific measures to be used, and specifications that would be applied, to protect these architectural resources during the construction period.

As mandated by Section 106 of the National Historic Preservation Act (NHPA) of 1966, FRA, Amtrak, and NJ TRANSIT have participated in an ongoing consultation process with the NJHPO with respect to potential effects on archaeological and architectural resources. As part of this ongoing process, measures will be explored to avoid or minimize to the extent practicable any significant adverse effects to archaeological and architectural resources. Development of these mitigation measures is set forth in an MOA, executed by FRA, NJHPO, Amtrak, and NJ TRANSIT and included in Appendix B.

G. VISUAL AND AESTHETIC RESOURCES

The project would result in the removal of the Portal Bridge and its replacement with two new bridges of slightly larger size and greater height, as well as multiple alterations to the Northeast Corridor, some of which would involve changes to its height, alignment, and appearance. However, the new structures would not substantially block or alter important views to and from visual resources in the study area. Furthermore, because the project would replace existing rail infrastructure with new rail infrastructure, the overall visual character, atmosphere, and use of the study area would remain largely the same. Therefore, the project is not expected to substantially affect the visual character of the study area nor block important views to and from visual resources.

As discussed above, pedestrian traffic within the study area is limited, since the majority of the study area is not accessible to public foot-traffic. Among the few pedestrian-accessible locations within the study area at the present time are Laurel Hill Park and Secaucus Transfer Station. The Hackensack River View Corridor, which is also visible from Laurel Hill Park, would be slightly altered by the replacement of the Portal Bridge; however, the change in view from the park would be very minor because the Portal Bridge can only be seen from limited and distanced vantage points within Laurel Hill Park. Therefore, the replacement of Portal Bridge with two new bridges is not expected to cause substantial changes to the overall visual character of the Hackensack River View Corridor from Laurel Hill Park. In addition, the design of the new bridge would be undertaken in coordination with the NJHPO and an effort would be made to incorporate historically compatible designs. This process would further minimize any visual changes or intrusions along the Hackensack River View Corridor.

H. AIR QUALITY

While all of the build alternatives would result in an increase in capacity over the Hackensack River and greatly improve operations between Swift Interlocking and Secaucus Transfer Station, the project would not increase the number of peak hour trains into PSNY. Therefore, the project would not substantially increase the number of new transit riders and would not measurably reduce VMT in the region. As a result, there would be no measurable effect on air quality due to the proposed build alternatives. While the proposed improvements would lead to an improvement in service along the Northeast Corridor that could increase passenger travel and reduce auto usage in the region, the air quality benefits would be modest. The Portal Bridge project would, however, allow other projects such as the ARC project to increase the number of trains to NYC, thereby providing substantial regional air quality benefits.

I. NOISE AND VIBRATION

With all build alternatives, a portion of the planned expansion of Laurel Hill Park parcel that is within 419 feet north of the Northeast Corridor would be subject to moderate noise impacts. The portion of the parcel that is within 226 feet north of the Northeast Corridor would be subject to severe noise impacts. Due to the proximity of the Laurel Hill Park expansion to the existing rail corridor, the No Action Alternative would also result in moderate and severe noise impacts on this resource. Therefore, the impacts that would occur at the Laurel Hill Park would be similar under any of the project alternatives, including the No Action Alternative. Since there are no vibration-sensitive uses in close proximity to the rail line, none of the project alternatives would result in adverse vibration effects.

J. ECOLOGY

ESSENTIAL FISH HABITAT

Table S-3 lists the species for which Essential Fish Habitat has been designated in the estuary of Hudson River/Raritan Bay/Sandy Hook Bays in New York and New Jersey. The proposed action is located within the mixing zone (M) of the estuary. A full analysis of EFH species, their habitats, and potential impacts is provided in Appendix C.

Table S-3
Essential Fish Habitat

Species	Eggs	Larvae	Juveniles	Adults	Spawning Adults
Red hake *(Urophycis chuss)*		M,S	M,S	M,S	
Winter flounder *(Pleuronectes americanus)*	M,S	M,S	M,S	M,S	M,S
Windowpane flounder *(Scopthalmus aquosus)*	M,S	M,S	M,S	M,S	M,S
Atlantic herring *(Clupea harengus)*		M,S	M,S	M,S	
Bluefish *(Pomatomus saltatrix)*		-	M,S	M,S	
Atlantic butterfish *(Peprilus triacanthus)*		M	M,S	M,S	
Summer flounder *(Paralicthys dentatus)*		F,M,S	M,S	M,S	
Black sea bass *(Centropristus striata)*		-	M,S	M,S	
King mackerel *(Scomberomorus cavalla)*	X	X	X	X	
Spanish mackerel *(Scomberomorus maculatus)*	X	X	X	X	
Cobia *(Rachycentron canadum)*	X	X	X	X	
Clearnose skate *(Raja eglanteria)*			X	X	
Little skate *(Leucoraja erinacea)*					
Winter skate *(Leucoraja occelata)*					

Note:
Freshwater Zone (F), Mixing zone (M), Saltwater Zone (S)

The potential effects of project construction on the EFH and measures to avoid, minimize or mitigate any adverse impacts including timing restrictions on in-water activities to protect anadromous fish spawning are discussed in Chapter 6 of the FEIS. Similarly, the operational effects of the build alternatives, including potential adverse effects from increased shading are discussed in Chapter 5.6 of the FEIS.

AQUATIC IMPACTS

Two types of permanent impacts to the aquatic ecosystem (specifically, to the plants, microorganisms, and animals that inhabit the bed of the aquatic ecosystem, referred to herein as

"benthic habitat") would be anticipated to result from operation of the Portal Bridge Capacity Enhancement Project:

- Loss of benthic habitat from in-water caissons, pile footprints, embankments, and retaining walls;
- Shading of benthic habitat from new overhead structures.

WETLAND IMPACTS

Three types of permanent wetland impacts would be expected from the build alternatives:

- Permanent loss of wetland habitat within caissons and/or pile footprints and from embankments and retaining walls;
- Shading of wetland habitat from new overhead structures; and
- Potential fragmentation of wetland habitat.

An estimate of wetland, open water, and benthic habitat impacts from each build alternative is presented in Table S-4. Between the DEIS and the FEIS, the wetland impacts have been refined in several respects as follows:

- The fill in the wetlands on the east bank of the Hackensack River for the approach structures has been reduced to account for the actual pier design that will be used to support the these elevated structures.
- The shading estimates were refined by taking into account the width of the proposed structure and its height above the ground elevation to more accurately depict these impacts.
- The permanent access road for the southern bridge in Alternatives DS and FS was moved from the Riverbend Wetland Preserve to the existing Northeast Corridor embankment, resulting in a reduction in impacts for these alternatives.
- The embankment for Alternatives DE and FE on the east side of the Hackensack River was widened to allow a new permanent access road to be constructed in lieu of the road that would be lost from increasing the elevation of the current embankment.

As shown in Table S-4, the changes resulted in a substantial reduction in the project's impact on wetlands, both from a fill and shading perspective. The most substantial decrease in potential wetlands impacts is with Alternatives DS and FS. As discussed in the DEIS, total potential impacts to wetlands was 13.1 and 12.3 acres for Alternatives FS and DS, respectively. The changes discussed above substantially reduced the total potential wetland impacts for these alternatives by approximately 6.7 acres. Based on the current designs, the estimated wetland impact for Alternative DS has been reduced to 5.7 acres while Alternative FS is estimated to impact 6.4 acres. The difference in permanent impacts to wetlands from the placement of fill between Alternatives DS and DE is estimated to be approximately 0.3 acres, as compared to the 3.9 acres shown in the DEIS. The difference between Alternative FE and FS is approximately 0.4 acres, whereas the difference was 4.0 acres in the DEIS. Most of the change has occurred in the area of the Riverbend Wetland Preserve on the east side of the Hackensack River south of the existing Northeast Corridor right-of-way. As described above, the two major issues contributing to that reduction in impacts is the relocation of the permanent access road and the use of elevated structure within the preserve.

Much of the wetlands that would be impacted by the build alternatives consist of *Phragmites*-dominated coastal and interior wetlands, with the remainder consisting of scrub-shrub and

herbaceous wetlands. Based on the current design, the differences among the four build alternatives with respect to wetland impacts are relatively minor. All four alternatives would have the potential for fragmenting wetlands. However, the use of structure (as opposed to embankment) for the bridge approaches would allow for ecological and hydrologic connectivity and would minimize the potential for fragmentation, although the potential for long-term impacts from shading is difficult to predict. As appropriate based on consultation with the involved natural resource agencies, a monitoring program will be implemented following project completion to identify if habitat fragmentation has occurred. The direct effects to open water and benthic habitat would be largely the same for all of the build alternatives.

Table S-4
Ecological Impacts by Alternative

		FEIS Total (Acres)	DEIS Total (Acres)
DS	Wetlands	5.72	12.32
	Benthic Habitat	0.11	0.12
	Open Water	0.79	0.86
	Shading	1.95	3.58
DE	Wetlands	5.4	8.4
	Benthic Habitat	0.11	0.12
	Open Water	0.79	0.86
	Shading	1.51	3.58
FE	Wetlands	6.06	9.1
	Benthic Habitat	0.12	0.13
	Open Water	0.79	1
	Shading	1.46	3.53
FS	Wetlands	6.43	13.1
	Benthic Habitat	0.12	0.13
	Open Water	0.79	1
	Shading	1.9	3.53

The impact assessment on wetlands by habitat type has been added to the FEIS and is summarized below for each build alternative in Table S-5. Impacts to different wetland habitats vary slightly with each alternative, with the greatest differences on the deciduous scrub/shrub wetland impacts between Alternatives FE/FS and DS/DE.

Differences in wetland impacts to *Phragmites*-dominated coastal and interior wetland habitat and herbaceous wetland habitat are small between the four alternatives. There would be 0.02 acres less impacts to *Phragmites*-dominated interior wetlands with Alternatives DS and DE. Alternatives FS and DS would have greater impacts on *Phragmites*-dominated coastal wetlands and herbaceous wetlands (0.2 and 0.12 acres, respectively) when compared with Alternatives FE and DE.

Table S-5
Probable Impacts on Wetland Habitat Type (in acres)

	DS	DE	FE	FS
Deciduous scrub/shrub wetlands	0.81	0.81	1.45	1.5
Phragmites-dominated interior wetlands	1.59	1.59	1.61	1.61
Phragmites-dominated coastal wetlands	2.43	2.23	2.23	2.43
Herbaceous wetlands *	0.89	0.77	0.77	0.89
TOTAL	**5.72**	**5.40**	**6.06**	**6.43**

Note: * The total includes probable wetland impacts in Sections 4 and 7.

A small portion of the project area lies within regulated wetland buffer area. Due to the highly developed nature of the project site and study area with a number of linear features—such as rail tracks, paved access roads, utility rights-of-way, and man-made earthworks—the value of the wetland buffer areas is low. For purposes of this impact assessment, any natural areas adjacent to wetlands were conservatively included in the total wetland impact area. The presence of wetland buffers that could be impacted by the proposed project will be confirmed during the permitting process and the need for mitigation measures will be coordinated with the project stakeholders.

TERRESTRIAL IMPACTS

According to the NJDEP, regions within the project area have been identified as colonial waterbird foraging habitat. Areas within one half-mile of the project have been identified as potentially containing American coot (state status: declining species), peregrine falcon (state status: endangered species), and pied-billed grebe (state status: endangered/stable species). With the exception of peregrine falcons, the species identified are primarily wetland species but may occupy upland fringe areas. Furthermore, the terrestrial areas within the project alternatives are already developed with rail rights-of-way, roads, utility infrastructure, and industrial facilities. These areas have relatively little value as terrestrial habitat, and as such, permanent impacts to terrestrial natural resources are expected to be minor. The operational impacts of the proposed project could result in increased development and/or shading of terrestrial areas in proportion to each alternative's area footprint. Lastly, changes in location of rail traffic and associated noise could have a minor impact on local reptile, bird, and mammal reproduction, foraging, and movement, although this impact would be only incrementally more than that of existing uses.

WATER QUALITY

The build alternatives would not result in any long-term adverse effects to water quality or stormwater in the study area. The small increase in impervious surface would not substantially change stormwater pollutant loadings to nearby surface waters. Direct discharges of stormwater from impervious surfaces to surface waters would be avoided through implementation of a stormwater collection system for these structures. In addition, the additional in-water structures, when considered in conjunction with the removal of the existing pivot pier, would not alter the flow characteristics of the Hackensack River. The potential for the build alternatives to result in short-term adverse impacts to water quality from construction activities is discussed in Chapter 6, "Construction Impacts."

FLOODPLAINS

All build alternatives would require construction in the 100-year floodplain since the existing right-of-way is, for the most part, surrounded by floodplain along its length particularly to the north.

Since the current Northeast Corridor right-of-way is on an embankment that is outside the 100-year floodplain, the only alternative that would not require construction in the floodplain would be the No Action Alternative. To minimize the risks associated with this construction, the build alternatives have been developed to maximize the use of elevated structures and retaining walls rather than using filled embankment in a large portion of the project area. While this increases the project costs, substantial ecological benefits accrue to both wetlands and floodplain resources.

MITIGATION

Due to the nature and location of the river crossing and the need for continuous operations along the Northeast Corridor, complete avoidance of wetland and open water areas would not be feasible for any of the build alternatives. Consistent with Executive Order 11990, it has been determined that there is no prudent and feasible alternative to avoid construction in wetlands and therefore measures to minimize harm have been considered. Efforts to minimize wetland impacts were incorporated into the alternative development and screening process and included selection of alignments that would minimize wetland takings, use of structure where practicable in lieu of unretained embankments for new rail lines, placement of retaining walls (to minimize fill) where feasible, and consultation and coordination with natural resource agencies. As discussed above, the potential impacts to wetlands from all build alternatives have been substantially reduced from those discussed in the DEIS. Measures to further minimize the potential for adverse ecological impacts will be considered as the project proceeds.

A preferred option for mitigation is to purchase credits from an established wetland mitigation bank. Currently, there are no approved banks available within the Meadowlands District. However, credits may become available from the Richard P. Kane Tract (referred to as the "Kane Tract" and previously known as the "Empire Tract") prior to Portal Bridge construction commencement in December 2011. The Kane Tract is being developed by the Meadowlands Conservation Trust as a wetland mitigation bank specifically for transportation projects in the Meadowlands District. The Kane Tract is being established in accordance with the Request for Qualifications (RFQ) issued by the Meadowlands Conservation Trust on April 7, 2008. As per the RFQ, 254 acres of the Kane Tract (out of the total 584 acres) will be made available for compensatory mitigation exclusively for NJ TRANSIT, the New Jersey Turnpike Authority, the New Jersey Department of Transportation (NJDOT), and the Port Authority of New York and New Jersey (PANYNJ).

It is expected that the scaling of mitigation efforts will consider impact area calculations for benthic, wetland, open water, shading, and floodplain impacts, applied at appropriate compensation ratios. These ratios will be developed in coordination with natural resource management agencies and will be based on factors including, but not limited to value, function, and/type of wetland impacted, existing contamination within the project area, and the availability of appropriate in-kind restoration areas.

K. CONTAMINATED MATERIALS

Subsurface disturbance, both within and in some cases beyond the existing right-of-way, would most likely occur in areas with a known degree of contamination. Construction of the proposed project would involve some demolition, relocation or other disturbance of existing structures; and excavation, disturbance, and likely removal for off-site disposal of some existing soil. Dewatering of groundwater would most likely also be required in specific locations, depending on the final determination of the types of foundations to be used for bridges, viaducts, and retaining walls, as well as the ultimate construction methods.

In order to prevent exposure pathways, the proposed project would include appropriate health and safety and investigative/remedial measures (conducted in consultation with the appropriate regulatory authorities). These measures would include:

- Procedures for pre-construction removal of asbestos and appropriate management of lead based paint and of PCB-containing equipment.
- Additional subsurface investigation, both to study sites not yet investigated and to better characterize soils to be disturbed by project construction.
- Development of a Construction Health and Safety Plan (CHASP) that would include detailed procedures for managing both known contamination issues (e.g., soil handling at known contaminated areas) and any unexpectedly encountered contamination issues. The CHASP would also include procedures for avoiding the generation of dust that could affect the surrounding community and the environment as well as the monitoring necessary to ensure that no such impacts are occurring.

Known contaminated sites would be affected by any of the proposed build alternatives, including chromite ore processing residue at (COPR) Sites 50, 103, and 131. While not expected based on the conceptual design, it is possible that COPR Sites 58 and 51 could also be affected. The Diamond Shamrock property (Site 113) would be affected to varying degrees in each alternative. In addition, there are other known contaminated properties and landfills in the vicinity of the proposed project site. All build alternatives would require substantial subsurface disturbance in specific areas such as the locations of bridge piers and abutments, retaining walls, catenary support structures, etc. Among the alternatives the only substantive difference with respect to contaminated materials is that Alternatives FS and DS would require subsurface disturbance within the Diamond Shamrock property, a vacant and contaminated property located south of the Northeast Corridor along the western shore of the Hackensack River. The construction for these alternatives would consist of embankment as well as the approach span for the river crossing and would therefore include subsurface disturbance. Therefore, these alternatives have a greater potential to disturb contaminated materials than the alternatives that use the existing Portal Bridge alignment for the southern bridge.

L. COASTAL ZONE MANAGEMENT

NJDEP regulates coastal zone activities under N.J.A.C. Section 7:7E, Coastal Zone Management (CZM) Policies. Section 7:7E sets forth substantive rules of the NJDEP regarding the use and development of coastal resources including areas containing tidal wetlands and the Hackensack Meadowlands District. Therefore, consistency with applicable CZM policies was evaluated. In addition, the build alternatives would require review by NJMC, and all activities must comply with pertinent regulations as defined by the rule.

While generally consistent with the policies of the CZM, the build alternatives in certain instances require mitigation to be consistent with specific aspects of some policies. Construction of the build alternatives would require in-water activities that could result in some adverse impacts to the natural environment including temporary impacts on water quality, aquatic resources, wetlands, and floodplains. In addition, construction of the build alternatives could adversely affect the navigational channel including the temporary mooring of construction barges in the channel to deploy project components. Furthermore, the build alternatives would result in an adverse effect on historic and archaeological resources; impacts on public open space, including the Riverbend Wetland Preserve and Laurel Hill Park; and disturbance of contaminated soils and sediments.

While a bridge is not considered a "water dependent" use in regards to CZM policies, prudent and feasible alternatives for crossing the Hackensack River do not exist. The proposed project design was developed to minimize impacts from fill in wetlands and tidal circulation within them. To the extent feasible, the proposed project would minimize disturbance to aquatic and terrestrial habitats and would include appropriate mitigation measures. Measures to mitigate these impacts and minimize harm include wetland mitigation with appropriate ratios and consultation with the NJDEP. Impacts to flood hazard areas would be mitigated in accordance with applicable regulations. Lastly, ongoing consultation will continue with the NJHPO to investigate further the presence of significant cultural resources and to develop appropriate mitigation measures.

The DEIS included an analysis of NJDEP CZM Policies dated February 2008. The NJDEP released updated CZM regulations in April 2008; the FEIS has been revised to reflect these changes. A full analysis of the NJDEP CZM Policies with respect to Special Areas identified in the coastal zone—as described in New Jersey Administration Code (N.J.A.C. Subchapter 3: Special Areas, Section 7:7E)—and whether the project alternatives are consistent with these policies is located in Appendix C, "Ecology." Only the policies that are relevant to the project alternatives are discussed in Appendix C.

M. ENVIRONMENTAL JUSTICE

On February 11, 1994, President Clinton issued Executive Order 12898, "Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations." This Executive Order is designed to ensure that each federal agency "shall make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations."

There are no direct adverse effects on residential land uses in the study area, and there are few, if any, residents in the project study area. The potential for adverse impacts to open space, noise and vibration, cultural resources, ecological resources, and construction were identified and analyzed to determine if these adverse impacts would disproportionately affect minority communities. The only potential adverse effect on minority and/or low-income communities would involve Laurel Hill Park, which would also affect non-minority and/or non-low-income communities.

The Portal Bridge project would not result in adverse impacts to the existing park. All four build alternatives would, however, require the permanent acquisition of 2.0 acres of the 14.9-acre parcel to accommodate the approach to the new northern bridge. Additionally, all project

alternatives (including the No Action Alternative) would have an adverse noise impact on a portion of the planned boardwalk in the new park parcel. NJ TRANSIT and Amtrak will coordinate with Hudson County, the NY/NJ Baykeeper, NJMC, and other stakeholders to develop appropriate mitigation measures for the loss of this planned open space area. Because the adverse open space impact would affect all users of the park, the project would not result in disproportionately high impacts to minority or low-income communities.

N. CONSTRUCTION IMPACTS

The construction sequencing and methods would be largely the same for any of the four build alternatives. The primary determinant in the construction schedule is whether both bridges are constructed concurrently (as in Alternatives DS and FS) or whether they are constructed sequentially (as in Alternatives DE and FE). Between the DEIS and FEIS, the construction scheduling for the two options (i.e., concurrent or sequential) has been refined to reflect the unique circumstances involved with constructing any of the build alternatives in the project area. Based on direct past experience from the adjacent Secaucus Transfer Station, the construction duration of many tasks has been increased substantially from what was proposed in the DEIS. Unlike other highway or bridge projects, construction of any of the build alternatives involves additional complexity and delays due to the constraints of working within and adjacent to an operating railroad with no viable detour or runaround available. This is especially important for this segment of the Northeast Corridor, the busiest passenger rail line in North America with more than 550 daily scheduled trains.

The construction start date is estimated for late 2011. This is based on the current schedule for preliminary engineering, permits and approvals, and final design, including the necessary procurement and review time. As currently estimated, the concurrent and sequential options would require the following time to construct:

- Alternative DS and FS – 66 months (5 years, 6 months)
- Alternative DE and FE – 94 months (7 years, 10 months)

With a construction start date of November 2011, the concurrent alternatives (DS and FS) would provide revenue service by May 2017. The sequential alternatives (DE and FE) would not begin revenue service until October 2019. Alternatives DS and FS could be constructed more quickly since the southern bridge and its approaches could be constructed in advance of completion of the northern span. For Alternatives DE and FE, the tracks on the northern bridge must be in operation and the existing bridge removed before construction of the southern span and its approaches can begin. Because of the similarities in the duck-under and fly-over structures, the type of structure chosen would not substantially affect the construction schedule. The conceptual construction process has been developed to ensure continuous operations along the Northeast Corridor and at Secaucus Transfer Station. There is the potential for temporary adverse impacts during the construction period, including open space, wetland, cultural resources, noise, and contaminated material effects. Certain utility relocations would be required. All construction-related impacts would be minimized and of short duration.

O. SECONDARY AND CUMULATIVE EFFECTS

SECONDARY AND INDIRECT EFFECTS

INDIRECT TRANSPORTATION EFFECTS

An important goal of the Portal Bridge project is to improve reliability and provide additional rail capacity over the Hackensack River to allow enhanced Amtrak and NJ TRANSIT operations. This would lead to beneficial indirect effects including: sustained regional economic growth, more efficient transportation systems, and a reduction in automobile VMT, resulting in regional benefits to vehicular traffic and air quality. While the Portal Bridge project does not by itself result in additional train service to PSNY, it would allow future projects (such as the ARC project) to do so by expanding Hackensack River capacity. Therefore, the Portal Bridge project would indirectly lead to a greater reduction in regional auto VMT, as rail ridership increases in response to the increased rail service from the ARC project and Amtrak and NJ TRANSIT's 2030 Operating Plan.

INDIRECT ECOLOGICAL AND ENCROACHMENT EFFECTS

Other indirect effects that may result from the Portal Bridge project pertain to the filling of wetlands, encroachment upon ecological resources, and disturbance of contaminated sediment. Three possible mechanisms could result in adverse indirect effects. The first is the direct loss of wetland and upland habitat and the resulting displacement of the existing wildlife and avian populations in that habitat. This displacement could impact the existing wildlife populations in areas further removed from the project site. Temporary disturbances during construction could also result in the displacement of wildlife and avian species from neighboring habitats. The second mechanism would be related to the short-term effects to water quality from disturbances to sediments and stormwater runoff during construction. Potential indirect impacts could occur if contaminated sediments or other pollutants are transported to locations further removed from the zone of direct impact. The third mechanism involves the potential long-term effects on adjacent wetlands from alterations of the project site. These alterations could result in changes to the existing hydrology or vegetative characteristics, thereby negatively affecting the value and quality of the remaining wetlands over the long-term.

For all of the adverse indirect effects identified above, the indirect impacts stem from the direct impacts. Mitigation measures have been proposed that would substantially minimize the potential direct impacts on these resources and therefore any subsequent indirect impacts. With respect to the loss of habitat and the potential displacement of wildlife and avian species, the amount of loss would be small in comparison to the extensive habitat adjacent to and in the surrounding areas. In addition, the project proposes to replace and/or restore wetlands within the Meadowlands District, further minimizing any adverse indirect impacts.

INDUCED GROWTH-RELATED EFFECTS

The build alternatives would result in beneficial secondary effects including sustained regional economic growth, and increase in regional mobility, and a reduction in automobile use. Since the project would relieve a critical bottleneck on a well-established rail corridor, rather than develop a new rail corridor, the potential for induced growth-related effects is small. Most of the area served by the existing rail network is already highly developed. Future development is planned within some parts of the indirect effects study area; however, the project would be supportive of

that development but would not cause it. Therefore, the project would further the goals of sustaining economic and population growth.

CUMULATIVE EFFECTS

TRANSPORTATION EFFECTS

The Portal Bridge project build alternatives would improve rail service reliability and provide additional rail capacity over the Hackensack River. The project would enable enhanced Amtrak and NJ TRANSIT operations and, in conjunction with the ARC project, allow the implementation of the proposed 2030 Operating Plan. Of the additional 25 peak hour trains reaching Manhattan, 16 would cross the new Hackensack River crossing(s). Therefore, 39 out of the 48 total planned peak hour trains would cross the new Portal Bridge(s) and contribute to cumulative regional benefits to transportation including the reduction of trans-Hudson auto trips by over 20,000 vehicles.

SOCIAL EFFECTS

Open Space, Parklands, and Recreation

All build alternatives would require acquisition of a portion of the land recently acquired for the expansion of Laurel Hill Park. Alternatives DS and FS would also require acquisition of a portion of the Riverbend Wetland Preserve. The project sponsors would work with the NJMC, Hudson County, and the NY/NJ Baykeeper to avoid any adverse cumulative effects by providing mitigation to offset the project's contribution to the loss of open space and parkland. This effort would be in conjunction with the wetland mitigation measures proposed for the temporary and permanent loss of these resources.

Historic Resources

The build alternatives would result in adverse effects on several resources including the existing Portal Bridge and the Pennsylvania Railroad Historic District. While the District retains historic integrity overall, it has undergone extensive alterations since the time of its S/NR eligibility determination. In light of the extensive recent alterations to the fabric and appearance of the Pennsylvania Railroad Historic District in the study area, the proposed project (together with these past alterations) would constitute an adverse effect. Measures will be explored to avoid or minimize to the extent practicable any significant adverse effects to archaeological and architectural resources. Development of these mitigation measures is set forth in an MOA, included in Appendix B.

ENVIRONMENTAL EFFECTS

Ecological Resources

The proposed build alternatives would require the permanent filling of up to 6.5 acres of wetlands, wetland preserve, and planned wetland restoration areas within the Meadowlands District. The ARC project would impact up to 27 acres of wetlands, for which mitigation has been proposed. Other projects in the Meadowlands—such as Allied Junction, Secaucus Transit Village, Meadowlands Rail Link, Encap Golf Holdings and Meadowlands Xanadu Redevelopment project—would also impact wetlands and other ecological resources in the Meadowlands. However, part of NJMC's mission is to prevent adverse cumulative effects and

they have established mechanisms to control and coordinate ecological resource impacts and mitigation. For each project in the Meadowlands District that negatively affects wetlands, compensation is required.

Noise

Under the ARC project, additional NJ TRANSIT and Amtrak service is proposed. The cumulative effect on existing noise levels would cover a greater area than the direct effect of the proposed project alone. The cumulative effect within the expanded Laurel Hill Park would extend approximately 50 feet further than the direct effect of the Portal Bridge project alone.

Air Quality and Energy

The VMT reduction in the New York-New Jersey metropolitan area that would result from the build alternatives in conjunction with the ARC project would correspond to a cumulative regional air quality benefit. Energy savings resulting from a shift from auto-based travel to commuter rail would also accrue on a regional basis. On a local level however, the build alternatives (in conjunction with the ARC project) would contribute to the increased passenger levels and taxi demand at PSNY. This would have a measurable but less than significant effect on ambient pollutant concentrations in the vicinity of the station.

Construction Impacts

The greatest potential for cumulative construction effects is the overlap of the Portal Bridge and ARC project in the area south of the Northeast Corridor between the Boonton Line and the Secaucus Transfer Station. The area surrounding the project site is a mix of open space and wetlands, utility and transportation corridors, a rail station and a former landfill. These surrounding land uses would substantially reduce any potential for air quality and noise impacts on sensitive uses or populations. Therefore, the potential for cumulative construction impacts to noise levels and ambient air quality would be very small due to the lack of sensitive receptors. As discussed below, the cumulative noise is a concern with respect to possible wildlife in the area. The potential cumulative issues as they relate to construction of the two projects include:

- Adverse impacts on public transportation (i.e., Amtrak and NJ TRANSIT) along the Northeast Corridor and at Secaucus Transfer Station.
- The cumulative effect on wetlands and ecological resources including the potential adverse effects on existing wildlife in the Riverbend Wetland Preserve. These impacts could include both direct disturbance to the habitat as well as indirect disturbances due to elevated noise levels on nesting birds.
- Potential cumulative effects from disturbance and release of contaminated and/or hazardous materials into the surrounding environment including wetlands and open water such as the Hackensack River.

P. SECTION 4(f) EVALUATION

Section 4(f) of the U.S. Department of Transportation (USDOT) Act of 1966 prohibits the Secretary of Transportation from approving any program or project that requires the use of: (1) any publicly owned land in a public park, recreation area, or wildlife and waterfowl refuge of national state, or local significance, or (2) any land from a historic site of national, state, or local significance (collectively "Section 4(f) resources"), unless there is no feasible and prudent

alternative to the use of such land and the project includes all possible planning to minimize harm to the resource.

The Section 4(f) regulations were recently updated in March of 2008 by USDOT in conjunction with the Federal Highway Administration (FHWA) and FTA to modify the procedures for granting Section 4(f) approvals. The regulations were updated to clarify language in regards to the factors to be considered and the standards to be applied when determining if an alternative that would avoid the use of a Section 4(f) property is feasible and prudent, and in the case of selecting a project alternative when all alternatives would use some Section 4(f) property. In addition, the new regulations established procedures for determining that the use of a Section 4(f) property has a *de minimis* impact on the property.

The build alternatives would require the use of the following Section 4(f) resources:

- All build alternatives would require the decommissioning and removal of the existing Portal Bridge, NR-eligible and SR-listed historic structure.
- All build alternatives would require acquisition of a 2.0-acre portion of a newly purchased extension of the Laurel Hill Park.
- All build alternatives require construction and excavation in an area of sensitivity for the Historic Cemeteries of Hudson County.
- All build alternatives would result in the modification and/or removal of significant features of the Pennsylvania Railroad Historic District, including the decommissioning of the existing Portal Bridge, shifting the vertical and horizontal alignment of the Northeast Corridor to connect with the new northern and southern bridges, and replacement of portions of the railroad's physical fabric.

As described in detail in Chapter 8, "Section 4(f) Evaluation," there are no prudent and feasible alternatives to the use of the existing Portal Bridge, the Pennsylvania Railroad Historic District, and Laurel Hill Park. With respect to the Historic Cemeteries of Hudson County, there is a possibility that the project as proposed may not disturb remains in the area of sensitivity and additional engineering and investigations are necessary to determine the exact extent of the resource.

Q. PREFERRED ALTERNATIVE

Since the build alternatives were developed in consideration of the project goals and objectives described earlier in this chapter, the differences among alternatives with respect to these goals and objectives are relatively minor. All four build alternatives would fully satisfy the first five goals described above. While there are some operational and engineering benefits to the duck-under as compared to the fly-over option, either group of alternatives would meet the stated goals relating to the operational, reliability, and capacity problems associated with the current rail infrastructure. The duck-under alternatives (Alternatives DS or DE) are cheaper than their fly-over counterparts (Alternative FS or FE), operationally superior, and require less right-of-way. Therefore, the selection of the preferred alternative becomes a choice between Alternatives DS and DE. These two alternatives were compared with respect to three issues: project cost; construction duration and risk; and environmental impacts.

In terms of project cost, when the year of expenditure and the time value of money are considered, the difference between the Alternatives DE and DS would be approximately $52 million or about 3 percent of the inflated cost. With the refinements in design and analysis

between the DEIS and the FEIS, the differences in adverse environmental effects has also been substantially reduced. With respect to adverse environmental effects, the major difference among the alternatives was their potential to result in impacts to ecological resources. While the difference in the amount of wetlands to be filled by Alternatives DS and DE was nearly four acres in the DEIS, the refined design has reduced the difference to 0.3 acres. The difference in shading impacts is less than 0.5 acres.

The most substantial difference among the duck-under Alternatives DS and DE is the construction duration and the potential adverse effects related to prolonging the construction period. The additional 28 months of construction required to complete Alternative DE would prolong the number of seasons that terrestrial and aquatic resources would be subject to the temporary effects of project construction, as well as increase the potential for indirect or secondary effects on the ecological resources of the Meadowlands. The longer construction duration would also potentially result in greater adverse effects on NJ TRANSIT and Amtrak passengers by increasing the time that they may experience disruptions to service or inconvenience. After careful consideration and evaluation, the project sponsors have identified Alternative DS as the preferred alternative for the Portal Bridge Capacity Enhancement Project. The FRA concurs in the selection of a preferred alternative.

R. PUBLIC PARTICIPATION

To initiate the plan for this project, FRA and NJ TRANSIT hosted agency and public scoping meetings in January 2007 to solicit comments on the purpose and need, alternatives to be considered and the technical evaluations to be undertaken and to receive input on the issues and concerns addressed in the DEIS. The public scoping meeting was supplemented with an open house with display materials and project staff available for one-on-one discussions.

Additionally, two committees were formed: the Technical Advisory Committee (TAC) comprised of agency and government representatives, and the Regional Citizens' Liaison Committee (RCLC), comprising members of the general public, interest groups, and associations. Meetings of both committees were held at key milestones during the EIS process. Beyond the scoping and committee meetings, a number of meetings were held with agencies and stakeholders on a topic-specific basis.

To augment these meeting opportunities, at the start of the scoping process, FRA and NJ TRANSIT launched a Web site dedicated to the project at www.portalbridgenec.com. The site has been updated throughout the project's duration, making available to the public information about meeting opportunities, copies of meeting presentations, maps and charts, as well as newsletters. Newsletters are published at milestones in the study and disseminated to the entire project mailing list and to libraries and community centers in the study area.

Analysis and documentation has been prepared in accordance with Section 106 of the National Historic Preservation Act (NHPA) of 1966, and with the New Jersey Register of Historic Places Act. An initial meeting of Consulting Parties for Section 106 took place early on in the project. After the initial meeting it was agreed that Section 106 Consulting Parties would be invited to attend subsequent meetings of the TAC, where Section 106 was discussed for the duration of the project.

With the completion of the DEIS, a public hearing was held in accordance with the requirements of the National Environmental Policy Act (NEPA) on March 18, 2008. This hearing was publicized broadly through a project newsletter which was mailed to the entire project mailing

list, as well as to local libraries and community centers to be publicly posted. A postcard was sent to the entire project mailing list to publicize the availability of the DEIS for public comment. The hearing provided attendees an opportunity to comment on the DEIS. All comments were documented and addressed in this FEIS in Chapter 11, "Response to Comments." The hearing was accompanied by an informational open house and comments on the DEIS were accepted via mail and e-mail until March 31, 2008. ✷

Chapter 1: Introduction

This Final Environmental Impact Statement (FEIS) evaluates project alternatives for and the potential effects of the Portal Bridge Capacity Enhancement Project in accordance with NEPA (42 U.S.C. 4321 et seq) and its implementing regulations (40 C.F.R. Parts 1500-1508; 64 FR 28545 and 23 C.F.R. Part 771). This FEIS also documents compliance with applicable federal environmental laws, rules, and regulations, including Section 106 of the National Historic Preservation Act (NHPA), Section 4(f) of the U.S. Department of Transportation Act, and Executive Order 12898, "Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations."

The National Railroad Passenger Corporation (Amtrak) and the New Jersey Transit Corporation (NJ TRANSIT) have proposed to enhance the capacity and improve the operation of the Portal Bridge, a rail crossing over the Hackensack River in Hudson County, New Jersey. The Federal Railroad Administration (FRA) and NJ TRANSIT have prepared this FEIS to analyze the potential environmental impacts from the proposed project. FRA is the lead federal agency for this EIS. The Federal Transit Administration (FTA), U.S. Environmental Protection Agency (USEPA), and the U.S. Coast Guard (USCG) are cooperating agencies for the environmental review.

NATIONAL ENVIRONMENTAL POLICY ACT (NEPA)

NEPA requires federal agencies to incorporate environmental considerations in their planning and decision-making through a systematic approach. Specifically, all federal agencies are to prepare detailed statements assessing the environmental impact of and alternatives to major federal actions significantly affecting the environment. In 1978 the Council of Environmental Quality (CEQ) promulgated regulations (40 C.F.R. 1500-1508) implementing NEPA which are binding on all federal agencies. The NEPA process consists of an evaluation of the environmental effects of a federal undertaking including its alternatives and measures to mitigate adverse impacts. In addition, the CEQ regulations state that agencies shall (1) make diligent efforts to involve the public in the NEPA process and (2) provide public notice of NEPA-related hearings, public meetings, and the availability of environmental documents so as to inform those persons and agencies who may be interested or affected by the proposed action.

SECTION 106 OF THE NATIONAL HISTORIC PRESERVATION ACT

Section 106 of the NHPA of 1966 requires that any federal agency having direct or indirect jurisdiction over a proposed federal or federally assisted undertaking take into account the effect of the undertaking on any district, site, building, structure, or other object that is included in or eligible for inclusion in the National Register of Historic Places. Under this provision, the NEPA lead agency, the State Historic Preservation Officer (SHPO), affected Native American tribes, and other "consulting" parties participate in a consultation process regarding the potential effects of the undertaking on historic resources. In certain limited cases, the Advisory Council on Historic Preservation (ACHP) participates in the consultation as well.

FRA initiated the Section 106 consultation process for the project in February 2007. The project's compliance with Section 106 of the NHPA is included in Chapter 5.2, "Historic Resources."

SECTION 4(f) OF THE U.S. DEPARTMENT OF TRANSPORTATION ACT

Section 4(f) of the Department of Transportation Act (1966) mandates the protection of "the natural beauty of the countryside and public park and recreation lands, wildlife and waterfowl refuges, and historic sites." Any transportation project that uses such Section 4(f) resources must conduct a Section 4(f) evaluation, and FRA may only approve a project requiring the use of such Section 4(f) resources if there is no prudent and feasible alternative that would avoid the use and if the program or project includes all possible planning to minimize harm to the affected land or resource. Chapter 8 addresses the Section 4(f) evaluation.

EXECUTIVE ORDER 12898, ENVIRONMENTAL JUSTICE

Executive Order 12898 ("Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations") requires federal agencies to involve the public on project issues related to human health and the environment. USDOT's "Final Order on Environmental Justice" indicates that project sponsors should elicit public involvement opportunities, including soliciting input from affected minority and low-income populations in considering project alternatives. The environmental justice analysis is discussed in Chapter 5.9.

FEDERAL, STATE, AND LOCAL REGULATORY OVERSIGHT

In addition to the requirements identified above, the project must comply with federal, state, and local regulations. To satisfy these regulations, FRA, NJ TRANSIT, and Amtrak have and will continue to solicit review and comments on the environmental documents for the project from the following agencies in addition to the cooperating agencies:

- U.S. Department of Interior—Review of potential effects on historic resources and parklands under Section 4(f) of the U.S. Department of Transportation Act.
- State Historic Preservation Office (SHPO) at the New Jersey Department of Environmental Protection (NJDEP)—Review of effects on historic resources under Section 106 of the National Historic Preservation Act.
- NJDEP, New Jersey Meadowlands Commission (NJMC), U.S. Army Corp of Engineers (USACOE)—Review of potential impacts to waters of the United States and state-regulated and NJMC jurisdictional wetlands.
- Other agencies as appropriate. ✷

A. INTRODUCTION

This chapter describes the proposed project, provides a background of the area's existing rail and marine traffic, identifies the problem with the current situation, describes the regional planning context, and states the project purpose, goals, and objectives.

B. PROJECT IDENTIFICATION

Amtrak and NJ TRANSIT have proposed the Portal Bridge Capacity Enhancement Project to enhance the capacity and improve the operation of the Portal Bridge, a passenger rail bridge over the Hackensack River. The existing Portal Bridge is a two-track, moveable swing-span rail bridge between the City of Kearny and the City of Secaucus in Hudson County, New Jersey. It was constructed by the Pennsylvania Railroad (PRR) and began operation in 1910. It made possible direct train service between western and southern points on the Pennsylvania Railroad and New York City. The current Portal Bridge was constructed as part of a larger project that also included the following elements: New York's original Pennsylvania Station; twin tunnels from Tonnelle Avenue in New Jersey to 9th Avenue in Manhattan; the portion of the Northeast Corridor from Tonnelle Avenue to the former Manhattan Transfer station in Harrison, New Jersey; and electric traction power and signal systems along this segment.

The Portal Bridge is located at Milepost 6.1 along the heavily used "High Line" portion of Amtrak's Northeast Corridor, which connects Newark, New Jersey and New York, New York (see Figure 2-1). The aging Portal Bridge, owned by Amtrak, is a bottleneck along the Northeast Corridor that conflicts with marine traffic and impedes efficient and reliable passenger rail service. As discussed below, the existing Portal Bridge poses reliability concerns, capacity constraints, and operational inflexibility. The Portal Bridge Capacity Enhancement Project FEIS examines four build alternatives (in addition to the "no build" scenario) that include replacement, rehabilitation, or modification of the existing structure, along with the construction of a second rail bridge. The build alternatives, which were identified through a comprehensive alternatives development and screening process, involve two new bridges to replace the existing bridge and differ primarily with respect to the location of the southern bridge and the type of grade-separated crossing, either track fly-over or duck-under, included to improve railroad operations. Chapter 3, "Project Alternatives," details the alternatives that are being considered to resolve the problems caused by the existing structure and identifies the preferred alternative.

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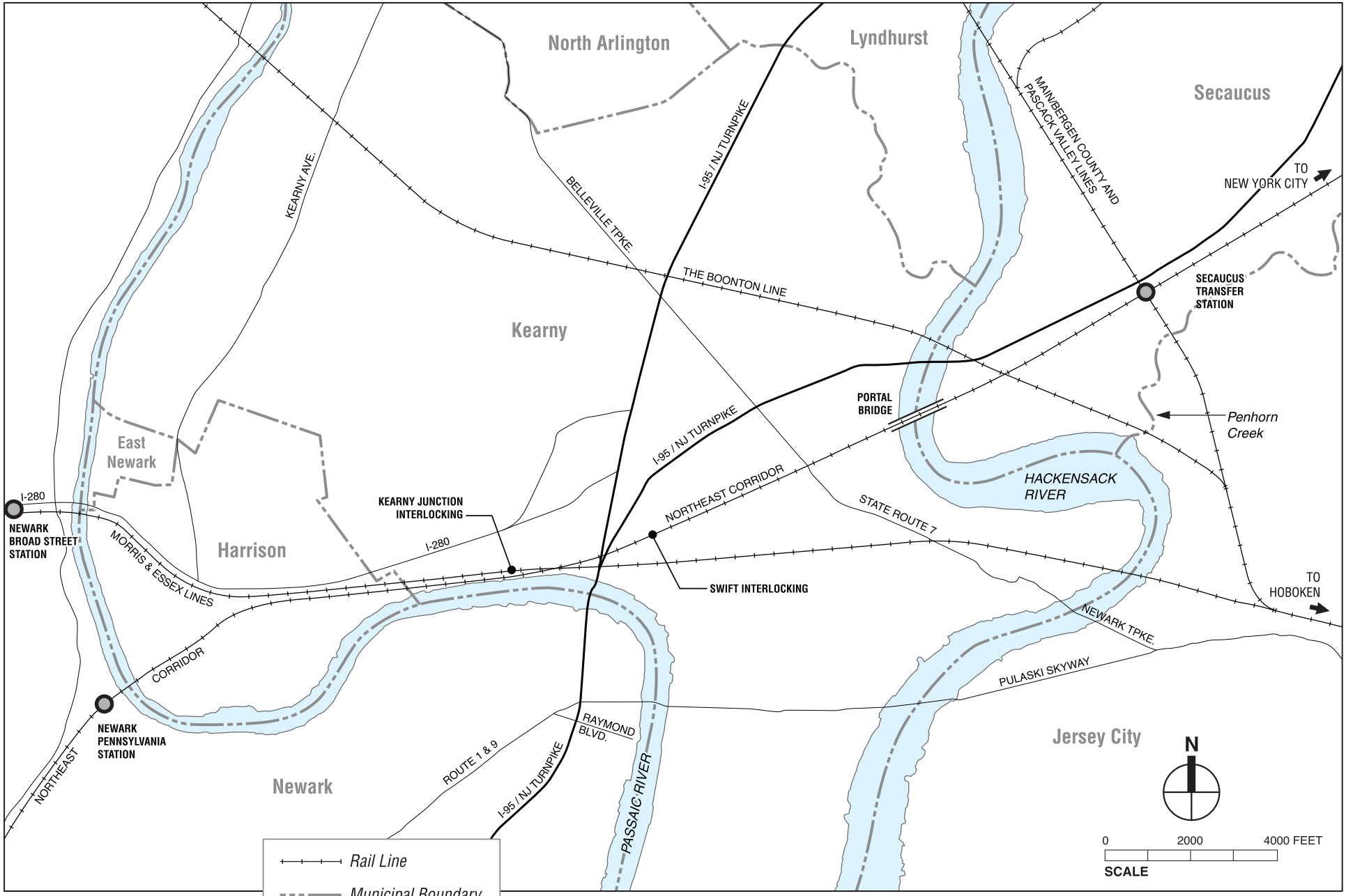

NJ TRANSIT
PORTAL BRIDGE CAPACITY ENHANCEMENT PROJECT

Project Study Area
Figure 2-1

C. EXISTING CONDITIONS

REGIONAL PASSENGER RAIL SYSTEM

The Northeast Corridor is the most heavily used passenger rail line in the U.S., both in terms of ridership and service frequency.[1] The Northeast Corridor extends from Washington, D.C. in the south to Boston, Massachusetts in the north, serving the densely populated northeast region, including Pennsylvania Station in New York City (PSNY). Amtrak, the nationwide inter-city passenger rail operator, owns much of and operates over all of the Northeast Corridor. Amtrak operates regional service, long distance service, and high-speed Acela Express service along the line. Several commuter rail agencies provide local and semi-express regional passenger services along the Northeast Corridor.

Amtrak provides service to over 500 destinations in 46 states on 21,000 miles of routes. Amtrak owns and operates the Northeast Corridor from PSNY in New York City to Washington D.C., including the above-referenced "High Line" connecting Newark, New Jersey and New York, New York. An average of over 69,000 passengers travel on up to 300 Amtrak trains per day across the nation. Amtrak carries approximately 24,000 intercity passengers per day between New York and Washington, D.C.

NJ TRANSIT, New Jersey's public transportation corporation, provides bus, rail, and light rail transit throughout the state. NJ TRANSIT is the nation's largest statewide public transportation system, providing bus, rail, and light rail services that connect major points in New Jersey, New York, and Pennsylvania. Over 800,000 daily trips are provided on NJ TRANSIT's 238 bus routes, 11 commuter rail lines, and 3 light rail lines. NJ TRANSIT's Northeast Corridor Line operates over Amtrak's Northeast Corridor in portions of Pennsylvania, New Jersey, and New York from Trenton to PSNY. Several of NJ TRANSIT's other commuter rail lines join Amtrak's Northeast Corridor west of the Hackensack River and subsequently travel under the Hudson River to their terminus at PSNY.

Amtrak's Northeast Corridor and NJ TRANSIT's commuter rail system helps drive the region's economic growth by connecting the regions of Washington, D.C., Baltimore, Wilmington, Philadelphia, and New Jersey with New York City. This includes the growing west-of-Hudson residential communities throughout New Jersey, Orange and Rockland Counties in New York, and portions of Pennsylvania. Amtrak carries approximately 15,700 passengers each day in each direction over the Portal Bridge (roughly 30,000 in both directions), including 3,900 passengers per day on the time-sensitive premium Acela Express service. NJ TRANSIT carries an average of 150,000 passengers per day in both directions over the Portal Bridge on approximately 350 trains.[2] Approximately 270,000 people commute into Manhattan from points west of the Hudson River in areas served by NJ TRANSIT's commuter trains, and an estimated 21 percent of these commuters use rail as the primary means of entering New York City.[3] This number has grown

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[1] Source: BGL Rail Associates, for the Amtrak Reform Council, *A Recommended Approach to Funding the Estimated Capital Investment Needs of the Northeast Corridor Rail Infrastructure*, April 2002.

[2] The approximately 350 trains does not include non-revenue movements, which increase the total number of trains NJ TRANSIT operates over the Portal Bridge per day to approximately 370.

[3] Source: Census 2000 commuting data found at http://www.census.gov/population/www/cen2000/commuting.html and Total Manhattan data from "Journey-to-Work in the New York Metropolitan Transportation Council (NYMTC) Area and the Surrounding Tri-State Metropolitan Region," NYMTC, October 1999.

by 64 percent since 1980. The North Jersey Transportation Planning Authority (NJTPA) projects the population of northern New Jersey will grow more than 16 percent by 2025, to 7.6 million people. Most of this growth is expected in the southernmost and westernmost counties, including Ocean, Sussex, and Warren Counties. The commuter rail system will need to meet increased demands from this population growth.

Currently, many of NJ TRANSIT's rail commuters and all Amtrak Northeast Corridor passengers en route to or from Manhattan and points south travel over the Portal Bridge. Four of NJ TRANSIT's rail lines—the Northeast Corridor Line, the North Jersey Coast Line, certain Montclair-Boonton Line trains, and certain Morris & Essex Line (which includes the Gladstone Branch and Morristown Line) trains—utilize the Portal Bridge (see Figure 2-2). Amtrak currently operates approximately 100 weekday scheduled trains in both directions over this segment of the Northeast Corridor. Amtrak's Northeast Corridor operations, which connect Washington, D.C., New York City, and Boston, are considered among the most financially viable of all its routes around the country, and service along this corridor has consistently been regarded as essential by each state through which it operates and by Congress. Amtrak receives approximately $1.5 million per day from passengers traveling on trains over the Portal Bridge, which is approximately one-third of Amtrak's total passenger related revenue.

Table 2-1 shows the number of passengers and number of trains using the Portal Bridge in the AM peak hour. Due to capacity constraints and higher demand, the ratio of passengers to trains is greater for those trains operating over the Portal Bridge than for those trains on other lines which do not operate over the Portal Bridge. As shown in Table 2-1, 20 NJ TRANSIT trains operating over the Portal Bridge serve 17,700 passengers while 13,600 passengers on other lines are served by 29 trains that do not operate over the bridge. Over the past few decades, improvements to the Northeast Corridor's infrastructure have greatly enhanced rail operations for Amtrak and NJ TRANSIT. Other planned projects intended to meet future transportation demands (discussed below under "Planning Context") will place additional importance on a reliable and efficient Hackensack River crossing.

Table 2-1
Existing NJ TRANSIT AM Peak Hour (7:30-8:30 AM) Eastbound Ridership

NJ TRANSIT Rail Line	Service Operating over the Portal Bridge[1]		Service Not Operating Over the Portal Bridge[2]	
	Total Number of Passengers	Trains	Total Number of Passengers	Trains
Northeast Corridor and North Jersey Coast Line	10,296	12	4,518	2
Main/Bergen County Line	NA	NA	3,693	13
Morris & Essex Line	4,896	6	1,512	4
Montclair-Boonton Line	1,118	2	819	4
Pascack Valley Line	NA	NA	1,270	4
Raritan Valley Line	1,320 [(3)]	NA	1,789 [(3)]	5
Total	**17,700**	**20**	**13,601**	**29**
Total Trains (including Amtrak trains)	**-**	**23**	**-**	**29**

Notes:
1 Includes NJ TRANSIT's Northeast Corridor Line, Amtrak's Northeast Corridor trains, and portions of NJ TRANSIT's North Jersey Coast Line, Montclair-Boonton Line, Morris & Essex Line and Raritan Valley Line.
2 Includes portions of NJ TRANSIT's North Jersey Coast Line, Montclair-Boonton Line, Morris & Essex Line and Raritan Valley Line. Includes all Main/Bergen County Line, and Pascack Valley Line trains.
3 Total ridership on the Raritan Valley Line, which terminates in Newark, is 3,109. 1,320 of these riders transfer to Northeast Corridor and North Jersey Coast Line trains in Newark.
Source: NJ TRANSIT, January 2006

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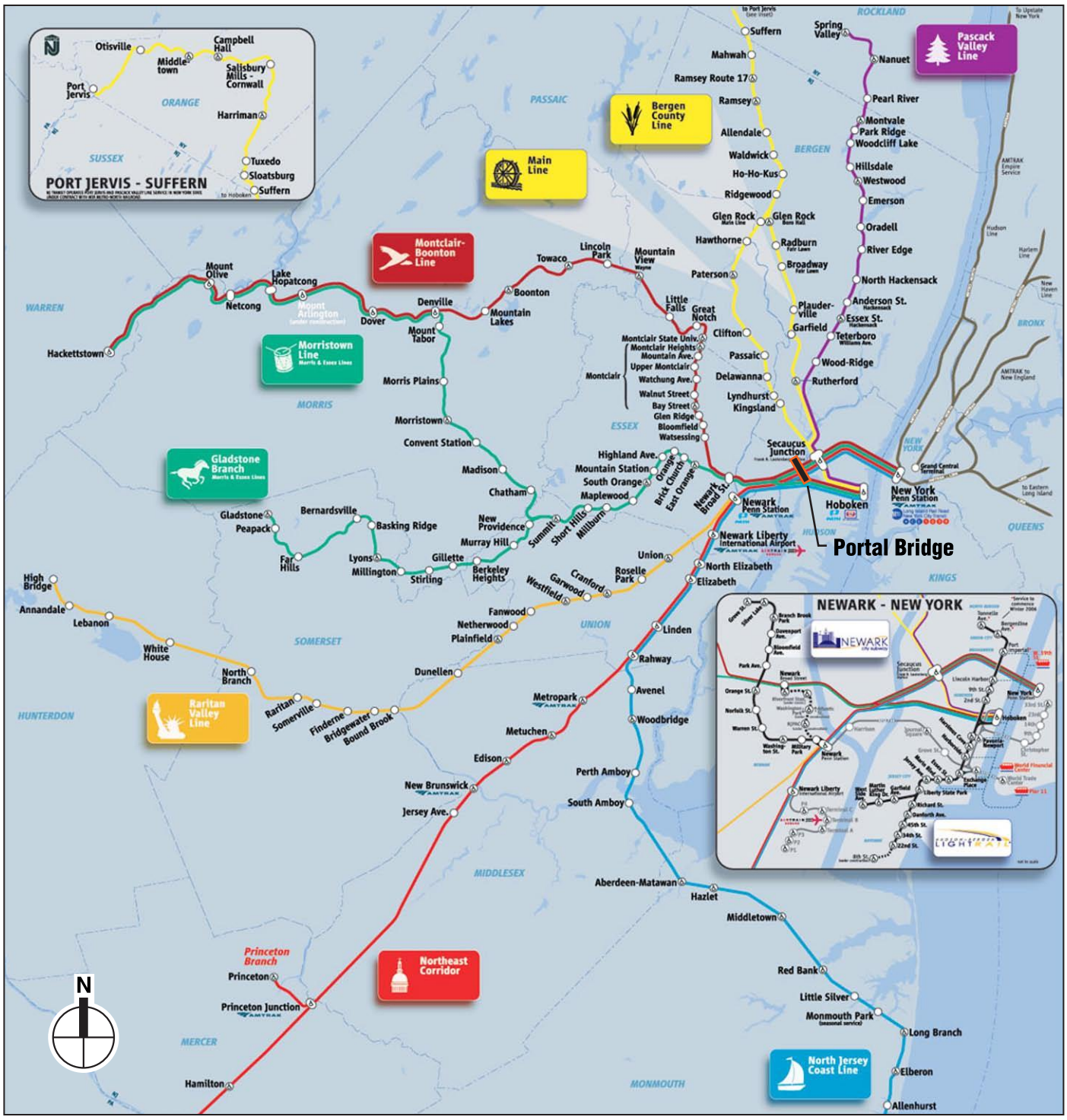


Portal Bridge

NOT TO SCALE

NJ TRANSIT
PORTAL BRIDGE CAPACITY
ENHANCEMENT PROJECT

NJ TRANSIT Rail System
Figure 2-2

NAVIGATION ALONG THE HACKENSACK RIVER

The Hackensack River is approximately 45 miles long from its headwaters in Rockland County, New York to its mouth at Newark Bay in New Jersey. The 18-mile portion officially designated by the USCG as navigable extends from the mouth at Newark Bay to New Milford, New Jersey. The practical head of navigation for commercial and large recreational vehicles is the Court Street Bridge in Hackensack, New Jersey. Commercial navigation on the Hackensack River has declined since the mid-20th century and the practical head of navigation has migrated downstream as the siltation in the river increased. Nonetheless, commercial shipping remains active along the navigable portion of the river. Two active commercial facilities are located upstream of the Portal Bridge along with multiple marinas serving pleasure craft.

Much of the Hackensack River is located within the Hackensack Meadowlands District. The district includes 30-plus square miles in 14 municipalities and is under the jurisdiction of the New Jersey Meadowlands Commission (NJMC). As discussed in Chapter 5.1, "Land Use and Social Conditions," the remaining sections of the Hackensack River abut non-protected land uses, including a mix of commercial, residential, and industrial uses.

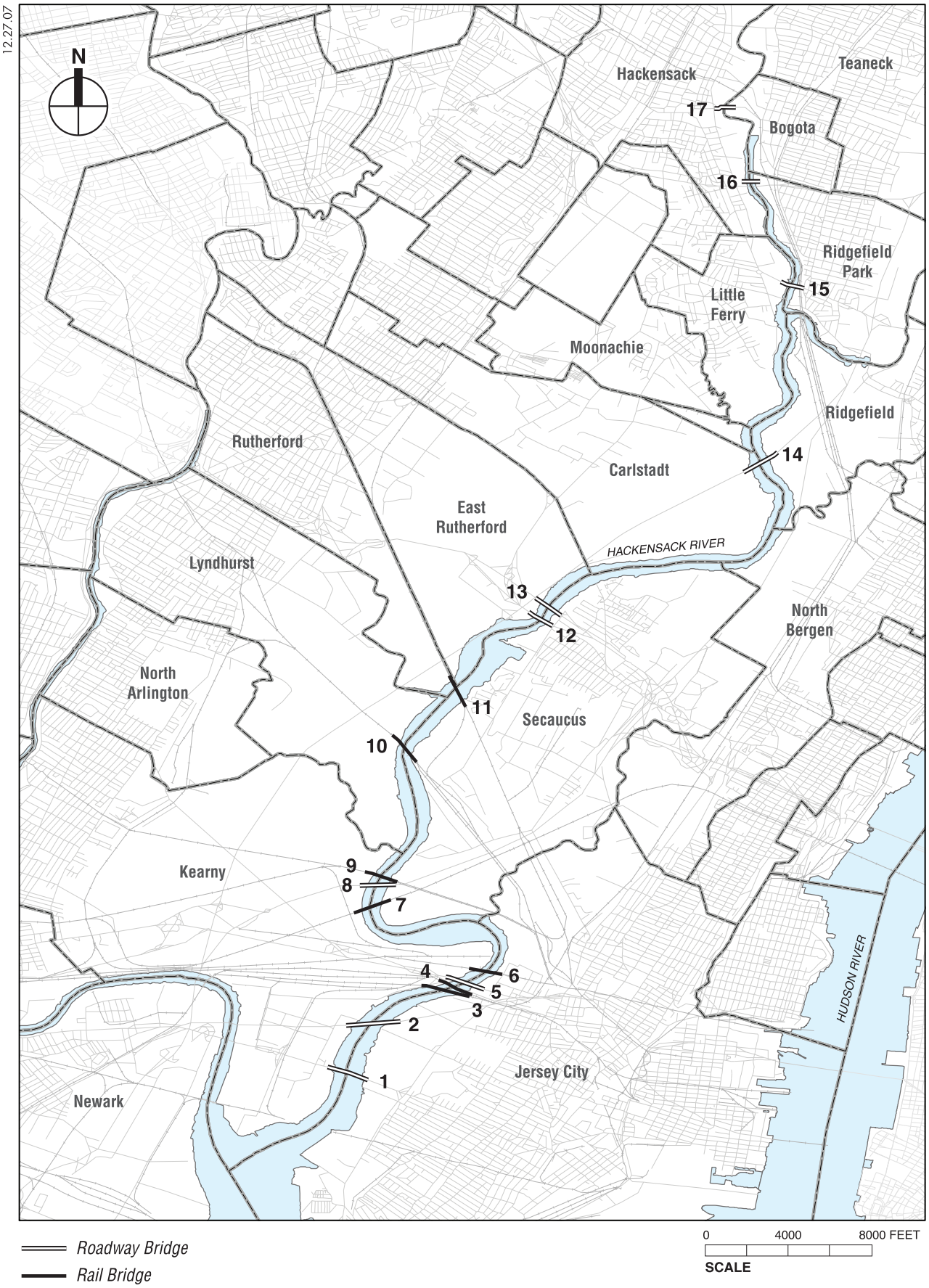
BRIDGES ALONG THE HACKENSACK RIVER

Between the mouth at Newark Bay, and the Court Street Bridge in Hackensack, there are 17 rail and highway bridges that span the Hackensack River (see Figure 2-3). Eleven of these structures are moveable and six are at a fixed elevation. Fixed bridges are constructed at an elevation that allows marine vessels to pass underneath the bridge. The bridge elevation is measured with respect to the mean-high-water (MHW) of the navigable waterway. Moveable bridges, which may be constructed at a lower elevation, are designed to open when needed to accommodate the passage of a vessel that could not pass under the bridge in its closed position. Types of moveable bridges include swing-span bridges (which rotate horizontally and open to a perpendicular position using a center pivot in the river), lift bridges (where a center section of the bridge is raised vertically), and bascule bridges (which are lifted from one or both sides of the river, like a drawbridge).

The characteristics of the 17 rail and highway bridges located between Newark Bay and the Court Street Bridge are shown in Table 2-2. They are listed in order from the southernmost to the northernmost bridge, and each bridge's location is identified in terms of its distance (in nautical miles) from the mouth at Newark Bay. The vertical clearance describes the distance between MHW and the bottom of the bridge structure (for moveable bridges, vertical clearance is provided for both the open and closed positions). Horizontal clearance describes the width of the navigable channel at that location.

MARINE TRAFFIC

The required vertical clearance for a marine vessel depends on the size and weight of the vessel and the tide conditions. Vessels require the most vertical clearance when traveling empty at high tide. The least vertical clearance is needed when a vessel is fully loaded at low tide. The need to open Portal Bridge and other moveable bridges along the Hackensack River is correlated with certain vessels. Amtrak logs information about each opening of the Portal Bridge and the type of boat or tug that passes. In addition, the U.S. Army Corps of Engineers (USACOE) maintains information regarding marine traffic along the Hackensack River.



NJ TRANSIT
PORTAL BRIDGE CAPACITY
ENHANCEMENT PROJECT

Hackensack River Bridges
Figure 2-3

Table 2-2
Hackensack River Bridges

		Bridge Name	Location (in nautical miles)	Bridge Type	Vertical Clearance		Horizontal Clearance
					Open*	Closed	
Bridges South of Portal Bridge	1	Lincoln Highway	1.9	Lift Auto Bridge	135'	35'	200'
	2	Pulaski Skyway	2.4	Fixed Auto Bridge	135'		300'
	3	PATH	3.0	Lift Rail Bridge	135'	40'	168'
	4	Hack Freight	3.2	Lift Rail Bridge	135'	11'	158'
	5	Wittpenn	3.2	Lift Auto Bridge	135'	25'	158'
	6	Lower Hack	3.4	Lift Rail Bridge	135'	40'	150'
	7	Portal Bridge	5.0	Swing Rail Bridge	>135'	23'	99'
Bridges North of Portal Bridge	8	NJ Turnpike	5.3	Fixed Auto Bridge	103'		259'
	9	DB Swing	5.4	Swing Rail Bridge	>135'	7'	99'
	10	Upper Hack	6.9	Lift Rail Bridge	110'	8'	127'
	11	HX Draw	7.7	Bascule Rail Bridge	>135'	4'	101'
	12	Rte. 3 EB	8.8	Fixed Auto Bridge	50'		148'
	13	Rte. 3 WB	8.9	Fixed Auto Bridge	50'		150'
	14	NJ Turnpike	11.8	Fixed Auto Bridge	49'		165'
	15	Rte. 46	14.1	Bascule Auto Bridge	>135'	35'	150'
	16	Rte. I-80	15.2	Fixed Auto Bridge	51'		148'
	17	Court St.	16.2	Swing Auto Bridge	>135'	3'	56'

Note: * Swing-span bridges have an infinite vertical clearance when in the open position, denoted above as >135'.
Source: USCG, *Passaic and Hackensack Rivers Navigation Chart*, May 1980.

To assess the existing marine traffic, Portal Bridge data logs from April 2004 to April 2006 were examined. It was determined that, during that time period, the average vertical clearance needed for those vessels that required a bridge opening was 27 feet. The smallest vertical clearance required by a particular vessel was 18 feet and the greatest vertical clearance required was 49 feet. Table 2-3 shows the distribution of marine vessels requiring various vertical clearances during the time period studied. Excluded are those vessels that did not require an opening of the bridge (e.g., small recreational boats that can pass under the bridge in its closed position). Almost half of the vessels that requested a bridge opening require a vertical clearance of 35 to 40 feet. Four percent of vessel trips require a clearance greater than 40 feet. Vertical clearance requirements could not be determined for one percent of the vessels identified in the evaluation.

Table 2-3
Portal Bridge Openings, by Vessel Clearance (2004-2006)

Required Clearance*	Number of Openings	Percent of Total Openings
0 - 5 Feet	0	0%
5 - 10 Feet	0	0%
10 - 15 Feet	0	0%
15 - 20 Feet	6	1%
20 - 25 Feet	128	19%
25 - 30 Feet	71	11%
30 - 35 Feet	112	17%
35 - 40 Feet	317	48%
40 - 45 Feet	17	3%
45 - 50 Feet	4	1%
No Data	8	1%

Note: * Required clearance was calculated as the distance from the water line at high tide to the highest fixed point of a lightly loaded boat or barge.
Sources:
United States Army Corps of Engineers, Institute for Water Resources, *Waterborne Transportation Lines of the United States*, 2004.
Amtrak Portal Bridge Opening Logs April 2004 – April 2006

D. PROBLEM IDENTIFICATION AND NEED

As discussed above, the Portal Bridge is a critical infrastructure element for Amtrak and NJ TRANSIT, enabling movement between destinations east and west of the Hudson River. The existing Portal Bridge, however, poses reliability concerns, capacity constraints, and operational inflexibility.

AGING AND LIMITING INFRASTRUCTURE

The existing Portal Bridge was constructed nearly a century ago. Design standards for steel railroad bridges anticipate a typical lifespan of 100 years. Given the Portal Bridge's age, the structure is nearing the end of its economic life. Structural integrity and passenger safety are top priorities for both Amtrak and NJ TRANSIT. One of Amtrak's stated goals in its Strategic Reform Initiatives and FY06 Grant Requests (April 2005) is the return of the Northeast Corridor infrastructure to a "state of good repair and operational reliability." NJ TRANSIT also strives to maintain the infrastructure in a "state of good repair," which is achieved when infrastructure components are replaced on a schedule consistent with their life expectancy. The existing Portal Bridge presents a considerable ongoing operation and maintenance expense for Amtrak because the mechanical and structural components are prone to failure due to age and wear.

In addition to the age of the Portal Bridge, several aspects of the bridge's design are problematic. The bridge consists of seven spans and totals 961 feet in length. The middle span is a 300 foot long moveable swing-span and is able to pivot to an open position (perpendicular to the rail line) to allow marine traffic to pass through the bridge. When the swing-span is open, the bridge is closed to train traffic. Special rail connections, known as "miter rails," allow the rails to disengage and the bridge to open and close. These connections are mechanically separated and automatically controlled for the swing-span to open and then are realigned after it is closed. Mechanical wedges must lock the structure in the closed position and, after being locked in place, special mechanical catenary connections must join the continuous contact wire on either end of the bridge to rejoin the electric traction connection. Depending on the reliability of this process, the period of time the bridge is closed to train traffic may be extended, resulting in train delays. Due to these issues, older swing-span bridges are now being replaced by other types of moveable bridges such as vertical lift and single-span bascule bridges. The miter rail connections have been an ongoing problem since the Portal Bridge was constructed, and the connections have been replaced several times. They are vulnerable to maladjustment and negatively affected by temperature changes. The rate of wear on these miter rail connections is worsened with higher train speeds and frequencies. As a result, while trains can operate at 90 miles per hour (mph) on adjacent portions of the Northeast Corridor, speeds on the Portal Bridge were previously been restricted to 70 mph, and most recently (December 2006) have been permanently restricted to 60 mph.

The bridge openings required to accommodate marine traffic increase the likelihood of mechanical malfunctions, which have in the past caused the bridge to remain in the open position for long periods of time, ranging in duration from 1 minute to 93 minutes. The average time required was 15 minutes per opening.

Between 1995 and 2006, the number of days between trouble reports or failures has steadily decreased—indicating that issues with bridge operations have become more chronic over time. Additionally, the failure minutes per day (a metric that measures both the frequency of trouble reports and the amount of time required to correct the problem) ranged from 0 minutes per day

to a maximum of 1,943 minutes per day, with an average of 50.3 minutes per day. Although in some cases these failures reflect situations where the Portal Bridge was unable to open for marine traffic, the majority of these failures reflect instances where the bridge was opened and unable to close, thereby restricting train traffic. It should also be noted that the bridge is sometimes immediately closed for repair once a problem is identified, in which cases marine traffic is restricted. The aging and limiting infrastructure is clearly problematic for both rail and marine traffic.

CAPACITY CONSTRAINTS AND OPERATIONAL INFLEXIBILITY

The two-track configuration of the Portal Bridge and the speed restrictions discussed above limit the number of trains that can cross the Hackensack River, which is especially problematic during peak commuter hours. Recent system enhancements, such as the implementation of NJ TRANSIT's MidTOWN Direct service (which allows a limited number of Morris & Essex Line trains and Montclair-Boonton Line trains to merge onto the Northeast Corridor west of Portal Bridge for direct access to Midtown Manhattan) have increased the total number of daily trains traveling over this already congested section of rail line.

The Northeast Corridor has two tracks between Swift Interlocking (the point where MidTOWN Direct trains merge onto the Northeast Corridor) and Secaucus Transfer Station (the point where six NJ TRANSIT lines intersect). Typically, one track operates eastbound and one track operates westbound. This current configuration creates two bottlenecks. Eastbound trains must merge from two tracks to one track at Swift Interlocking, and westbound trains must merge from two tracks to one track leaving Secaucus Transfer Station. Because multiple rail lines and different train types operated by NJ TRANSIT and Amtrak are merging onto a two-track bridge crossing, the window of opportunity for each train is reduced. This operational inflexibility means that a delay on one rail line can cascade to other rail lines. For example, if a Northeast Corridor Line train is delayed, a MidTOWN Direct train on the Montclair-Boonton Line may be forced to miss its appointed time to pass through Swift Interlocking and over the Portal Bridge. Similarly, if an eastbound North Jersey Coast Line train is stalled on or near the Portal Bridge, other eastbound trains on the Morris & Essex, Montclair-Boonton, and Northeast Corridor Lines may be delayed. Likewise, delays to a NJ TRANSIT train may delay Amtrak trains and vice versa.

A recent analysis (January 2006) of train delays between Swift Interlocking and Secaucus Transfer Station was conducted over a two-week period. The analysis revealed that on seven out of ten weekdays, at least one peak period train was delayed due to the merge at Swift Interlocking. On average, an additional four to five trains were subsequently delayed due to the initial interruption to service. Frequent bridge openings exacerbate the current operational inflexibility. Bridge openings must be scheduled during certain time periods, during which trains cannot operate over the Portal Bridge. Since several rail lines use the bridge, mechanical malfunctions during bridge closings cause a ripple effect throughout the corridor.

MAINTENANCE DIFFICULTIES

The complexity of the swing bridge with the miter rail configuration and the level of train traffic require vigilant maintenance and inspection of the Portal Bridge, especially the connections between the bridge and adjacent track. The current level of train traffic over the bridge leaves few windows of opportunity for maintenance and inspection activities to be performed. Sections of track must be taken offline to perform these tasks. To avoid disruption to passenger service, Amtrak is forced to conduct maintenance and inspection during increasingly limited time

periods, such as at night and on weekends. This results in high costs from increased labor premiums for night and weekend work, and reduced productivity rates due to the small work windows. Often, if a component fails during the day, trains are forced to operate slower than usual through peak period operations until the following night when a section of track can be removed from service. As traffic along the Northeast Corridor increases, fewer suitable time periods for maintenance and inspection will be available.

CONFLICTS WITH MARITIME USES

As discussed above, the Hackensack River is a navigable waterway governed by USCG. The existing Portal Bridge has only 23 feet of clearance between MHW and the lowest steel elevation of the bridge. As a result, marine traffic along this segment of the Hackensack River requires the frequent opening of the Portal Bridge and disruption of Northeast Corridor train traffic. Bridge opening logs show that between April 2004 and April 2006, there were 663 bridge openings for marine traffic. This conflict is currently managed by restricting the times during which the bridge is permitted to open. Under current federal regulations, the bridge need not be opened Monday through Friday, except federal holidays, from 6:00 AM to 10:00 AM and from 4:00 PM to 8:00 PM. However, additional bridge openings shall be provided for commercial vessels from 6:00 AM to 7:20 AM; 9:20 AM to 10 AM; 4 PM to 4:30 PM and from 6:50 PM to 8:00 PM; if at least one-hour advance notice is given by calling the number posted at the bridge. In spite of these restrictions, both NJ TRANSIT and Amtrak's service is still affected by bridge openings due to marine traffic. An almost equal number of trains operate during the period when openings are not limited as operate during the period when opening are limited (see Figure 2-4).

Additionally, bridge malfunctions can cause delays that cascade from the non-peak period into the peak period. As the most heavily traveled rail line in the U.S. (as measured by number of daily train movements), trains are carefully scheduled going into and out of New York City to correspond to the capacity of the existing track and signal system infrastructure and the platform capacity at PSNY. Delays to rail traffic (even as short as two to three minutes) can cause trains to fall unrecoverably behind schedule. This is because some trains are scheduled as closely as two minutes apart. Once a train falls behind schedule or "out of slot," that delay can cascade to one or more following trains. Depending on the timing and duration of the delay, and the direction of the affected train(s), it can be impossible to fully recover from the delay until the peak period has ended. These delays have the potential to affect both Amtrak and NJ TRANSIT's most time-sensitive riders.

Just as the Portal Bridge can be stuck in the open position, obstructing the passage of trains, it can also be stuck in the closed position, obstructing the passage of boats and barges. Additional delays to mariners can occur if they arrive during the time-period when bridge openings are restricted, or if the period when the bridge can be opened does not correspond to the required tide.

E. PLANNING CONTEXT

PRIOR STUDIES

Prior planning efforts evaluated replacement of the Portal Bridge and enhancing capacity over the Hackensack River. The first proposal to supplement railroad capacity on the Hackensack River was released in January 1970 by the Penn Central Transportation Company (the successors to the PRR), and the New Jersey Department of Transportation (NJDOT). This study,

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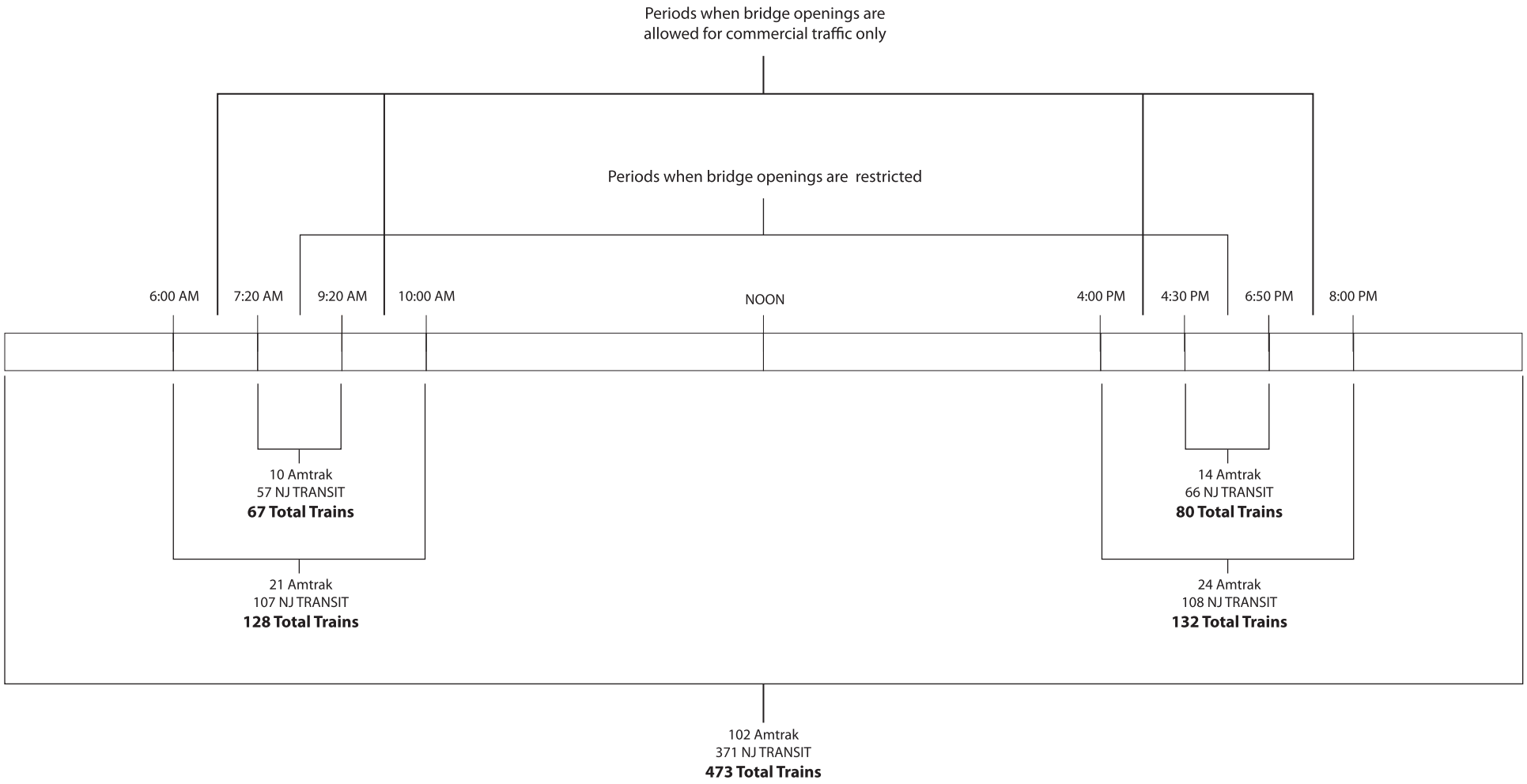

NJ TRANSIT
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ENHANCEMENT PROJECT

Train Traffic During Bridge Opening Restrictions

Figure 2-4

entitled *Pennsylvania Station New York Capacity Study* assessed the capacity of PSNY and examined potential alternatives to expanding commuter train service from northern New Jersey into New York City. As part of this study, Penn Central considered the construction of additional tracks on the Northeast Corridor between the western shore of the Hackensack River and PSNY, including the construction of a two-track lift bridge over the Hackensack River.[1] Penn Central entered bankruptcy protection six months after the release of the report and did not pursue these recommendations further. That same year, Congress passed the Rail Passenger Service Act (P.L. 91-518), creating Amtrak.

The next effort to replace the Portal Bridge began two years later when the Port Authority of New York and New Jersey (PANYNJ) proposed a mass transit program for the New York City/northern New Jersey area. The program included the construction of a new Hackensack River Bridge and rail yard in Secaucus and two connections between the Erie-Lackawanna and Penn Central Main Lines (approximately the present day Main/Bergen County and Pascack Valley Lines and Northeast Corridor, respectively). None of the elements of this program were pursued and it was officially dropped in late 1975. Shortly thereafter, Congress passed the Railroad Revitalization and Regulatory Reform Act of 1976 (the "3R Act"), which transferred control of the Northeast Corridor (including the Portal Bridge) from the Penn Central to Amtrak and created a $1.75 billion track improvement program called the Northeast Corridor Improvement Program (NECIP). The NECIP originally included provisions to replace the existing Portal Bridge with a high-level fixed bridge, but it was later scaled back to include only refurbishment and modernization of the bridges machinery.

CURRENT PLANNING CONTEXT

AMTRAK

In spite of being refurbished under the NECIP, the Portal Bridge remains a significant hindrance to efficient and reliable service on the Northeast Corridor. A January 2000 report to Congress from Amtrak called the Portal Bridge a costly structure to maintain and operate, and a "threat" to New Jersey's plans to expand transportation into areas not already served.[2] Amtrak later commissioned a study for the replacement of the Portal Bridge and in March 2005 released a report entitled, *Study for the Replacement of Portal Bridge over the Hackensack River.* This report examined six different alternatives for spanning the Hackensack River and included different combinations of bridges and flyovers. The findings and recommendations of that study were considered in the development of the alternatives analyzed in this EIS. The report recommended the construction of two new two-track bridges over the Hackensack River.

Amtrak has a "state of good repair" capital program for the Northeast Corridor and has begun construction on a replacement bridge over the Thames River and has completed the design for a replacement bridge over the Niantic River (both in Connecticut). Amtrak-funded major capital projects in the vicinity of the Portal Bridge study area include the reconstruction of the North (Hudson) River tunnel Weehawken shaft to improve normal and emergency ventilation and emergency egress; and installation of standpipes and improved lighting in the tunnel.

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[1] Source: Penn Central Transportation Company in co-operation with the New Jersey Department of Transportation, *Pennsylvania Station New York Capacity Study*, January 1970.

[2] Source: National Passenger Rail Corporation, *Report to Congress: The Northeast Corridor South End Transportation Plan - Washington, D.C. to New York City; Phase II Letter Report*, January 2000.

NJ TRANSIT

Numerous improvements have been made to the Northeast Corridor in recent years, and many more large- and small-scale improvements are planned. NJ TRANSIT's MidTOWN Direct service (implemented in 1996 and expanded in 2002) allows passengers on the Morris & Essex Line and the Montclair-Boonton Line the option of direct service to Midtown Manhattan in addition to previously existing service to Hoboken. The recently completed Secaucus Transfer Station serves as a transfer station for NJ TRANSIT commuter rail passengers. Passengers on Hoboken-bound trains can switch for service to PSNY and vice versa. Other recent improvements include: the train station at Newark International Airport; extension of electrified territory; upgraded signal system for increased train frequency; additional substations for improved traction power system and additional concourses at PSNY.

NJ TRANSIT has several large transportation projects currently in the planning phase. NJ TRANSIT is currently preparing a Draft EIS for the Monmouth-Ocean-Middlesex project, which will evaluate commuter rail alternatives for areas within those three central New Jersey counties. In December 2006, NJ TRANSIT issued a Draft Environmental Assessment for the New Jersey-Pennsylvania Lackawanna Cut-Off Passenger Rail Service Restoration project, which will restore passenger rail service along the Lackawanna Cut-Off to Monroe County, Pennsylvania via NJ TRANSIT's Morris & Essex Line. NJ TRANSIT is currently performing an alternatives analysis for a project which would restore passenger rail service on the Northern Branch line from North Bergen to Tenafly.

NJ TRANSIT issued a DEIS in February 2007, a Supplemental DEIS in March 2008, and has begun preliminary engineering for the Access to the Region's Core (ARC) project. The ARC project includes construction of a new two-track tunnel under the Hudson River and a new rail terminal in Manhattan under 34th Street and adjacent to the existing PSNY. The ARC project includes connections to rail lines serving residents of Rockland and Orange Counties in New York and Bergen and Passaic Counties in New Jersey. The ARC project is particularly relevant to the Portal Bridge Capacity Enhancement Project since the ARC project would result in additional trains traversing the Portal Bridge. The ARC service plan proposes increasing the number of trains crossing the Portal Bridge in the AM peak hour from 23 to 37. As the Portal Bridge Capacity Enhancement Project is independent of any other project, the ARC project is not part of the No Action Alternative in this EIS. Therefore, the analysis of the proposed alternatives and their potential environmental effects in Chapter 3, "Project Alternatives," Chapter 4, "Transportation Effects," and Chapter 5, "Social, Economic and Environmental Considerations" reflect future conditions without the ARC project. The assessment of the ARC project in conjunction with the Portal Bridge project is addressed only in Chapter 7, "Secondary and Cumulative Effects." That analysis addresses both the effects as well as the additional infrastructure required within the Portal Bridge project area to support ARC's proposed service plan. A complete list of planned projects that are considered in the analysis of the Portal Bridge Capacity Enhancement Project is provided in Chapter 3, "Project Alternatives."

F. PROJECT PURPOSE, GOALS, AND OBJECTIVES

FRA, Amtrak, and NJ TRANSIT, recognize the need to address the problems posed by the existing Portal Bridge. The Portal Bridge Capacity Enhancement Project is being proposed by Amtrak and NJ TRANSIT to improve the current situation and prepare for future demand. *The purpose of the project is to replace the nearly 100-year-old Portal Bridge and eliminate capacity constraints on the Northeast Corridor between Swift Interlocking and Secaucus Transfer Station.*

To compare and contrast the project alternatives developed as part of the EIS process, specific project goals and objectives have been identified. A project's goals and objectives are the foundation of its purpose and need under NEPA. They are used as the basis for developing the criteria and screening methodology for evaluating the project alternatives. Six goals have been established for the Portal Bridge Capacity Enhancement Project, relating to capacity, reliability, safety, compatibility, cost-effectiveness, and environmental considerations. The objectives further define the goals and provide specific and measurable means by which to evaluate project alternatives. While cost effectiveness is not an explicit project goal, the estimated capital and operation and maintenance costs of each project alternative will be considered in tandem with the project goals. The six project goals and their respective objectives are as follows:

GOAL 1: Enhance capacity to meet current and future demand—including new service—along the Northeast Corridor.

- Reduce the total number of locations between Swift and Allied Interlockings where trains must merge;
- Provide sufficient capacity to maintain adequate passenger rail service, prevent future overcrowding, and accommodate emerging markets for commuter and intercity rail passenger service; and
- Prevent future overcrowding of passenger rail trains.

GOAL 2: Improve service reliability and operational flexibility.

- Upgrade the nearly century-old moveable bridge to a state-of-good-repair or replace the structure; and
- Reduce the vulnerability of the existing capacity-constrained rail infrastructure to unexpected train delays, including weather-related incidents, breakdowns, and unusual travel demand.

GOAL 3: Provide a redundant Hackensack River crossing to facilitate maintenance and enhance passenger safety and security.

- Construct additional tracks to allow for continued rail operations during off-peak maintenance periods; and
- Provide a secondary crossing to enable continued rail operations in the event of an unplanned closure.

GOAL 4: Minimize conflicts with maritime traffic.

- Avoid or minimize disruptions to marine traffic during construction, while maintaining uninterrupted service to rail traffic;
- Minimize delays to trains or marine vessels due to bridge operations; and
- Provide sufficient vertical and horizontal clearance for larger marine vessels.

GOAL 5: Optimize existing infrastructure and planned improvements.

- Ensure project alternatives do not preclude completion of planned projects, including the proposed ARC project.

GOAL 6: Minimize impacts on the surrounding environment.

- Minimize impacts to wetlands and other ecologically sensitive areas;
- Minimize impacts to cultural resources; and
- Minimize short-term construction impacts to the environment.

G. ENVIRONMENTAL REVIEW PROCESS

FRA and NJ TRANSIT have prepared this FEIS to analyze the potential environmental impacts from the proposed project. FRA is the lead federal agency for this FEIS. FTA, USCG, and USEPA are cooperating agencies for the environmental review. A Notice of Intent (NOI) for the Portal Bridge Capacity Enhancement Project was published in the *Federal Register* on December 12, 2006. The NOI initiated the environmental review process and publicized the availability of the Scoping Document, which described the proposed project alternatives and environmental analysis methodologies. To solicit comments on the Scoping Document, a public scoping meeting was held on January 17, 2007 in Newark, New Jersey, and an agency scoping meeting was held on January 9, 2007 in Newark, New Jersey. The comment period for scoping was closed on January 31, 2007.

The Notice of Availability of the DEIS was published in the Federal Register on February 15, 2008. The comment period on the DEIS remained open until March 31, 2008 and a public hearing was held on March 18, 2008 at the Hudson County Board of Chosen Freeholders in Jersey City, New Jersey. This FEIS responds to comments received during this period as well as the testimony from the public hearing. ✷

A. INTRODUCTION

Amtrak and NJ TRANSIT have proposed the Portal Bridge Capacity Enhancement Project to enhance the capacity and improve the operation of the Northeast Corridor crossing of the Hackensack River. Consistent with NEPA requirements and FRA guidance, several project alternatives are evaluated in this EIS. The project alternatives include four build alternatives in addition to a "no build" scenario (the "No Action Alternative"), wherein none of the project elements would be constructed and the existing Portal Bridge would remain in place. The build alternatives for the Portal Bridge Capacity Enhancement Project were identified through a comprehensive alternatives development and screening process that included considerable input from stakeholders and the public. As explained in Chapter 2, "Project Purpose and Need," the Access to the Region's Core (ARC) project—an independent rail infrastructure project undergoing a separate environmental review—is not included in the No Action Alternative for the Portal Bridge project. The ARC project would be located adjacent to the Portal Bridge project, and therefore any feasible Portal Bridge build alternative must provide connectivity to the planned ARC project and cannot preclude its construction.

Through the alternatives development and screening process, four build alternatives were identified as best meeting the project goals and objectives. These build alternatives were therefore recommended for further consideration in the EIS. Revenue service would begin between 2017 and 2019, depending on the build alternative. The year 2030 has been selected as the long-term planning year for all project alternatives, and is consistent with planning horizons being used for other independent regional rail infrastructure planning efforts. As such, 2030 is the environmental impact analysis year for this EIS. The project study area has been generally defined as the area bound by Kearny Junction Interlocking to the west, Secaucus Transfer Station (also known as the "Frank R. Lautenberg Station" or "Secaucus Junction") to the east, and roughly 2,000 feet north and 2,000 feet south of the existing Northeast Corridor (see Figure 3-1). The project study area also represents the area within which project elements would be constructed and where environmental impacts could occur. As explained in subsequent chapters of this EIS, each impact analysis may consider a larger study area to appropriately assess the potential for the project to result in adverse impacts.

This chapter includes a detailed description of the No Action Alternative and the four build alternatives analyzed in this EIS. A list of permits and approvals expected to be required for the proposed project is also provided.

B. NO ACTION ALTERNATIVE

The No Action Alternative consists of the transportation facilities most likely to be in place by 2030. The No Action Alternative assumes that the existing two-track swing-span Portal Bridge would remain in place (see Figure 3-2) and would be subject only to regular maintenance. This alternative serves as a baseline for comparison to the build alternatives. The No Action Alternative takes into account planned improvements that have recently been completed or are

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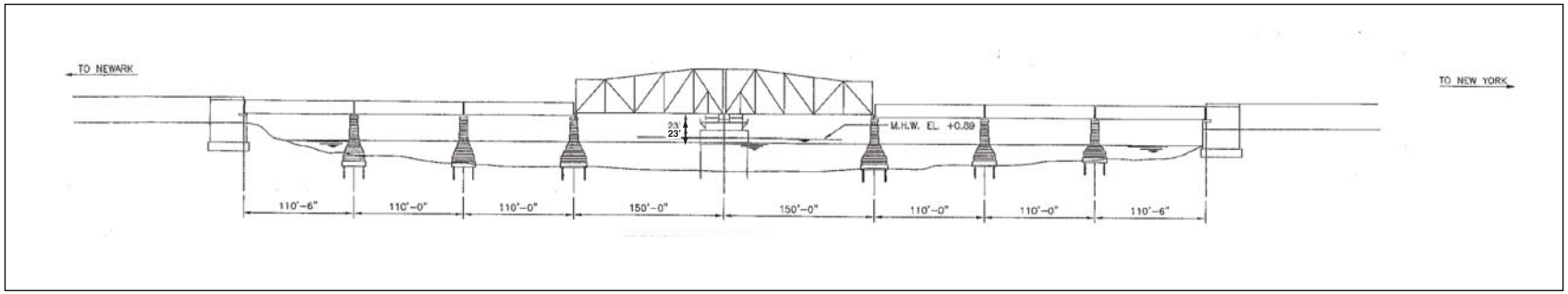
Study Area	4 1-A Landfill	8 Standard Chlorine	12 Koppers Coke
1 1-D Landfill	5 Jana Corporation	9 Diamond Shamrock	13 Hudson Generating Station
2 Kearny Junction Interlocking	6 Meadows Maintenance Complex	10 Laurel Hill Park	14 New Jersey Turnpike Exit 15x
3 Swift Interlocking	7 Kearny Intermodal Yard	11 Malanka Landfill	15 Secaucus Transfer Station

NJ TRANSIT
PORTAL BRIDGE CAPACITY
ENHANCEMENT PROJECT

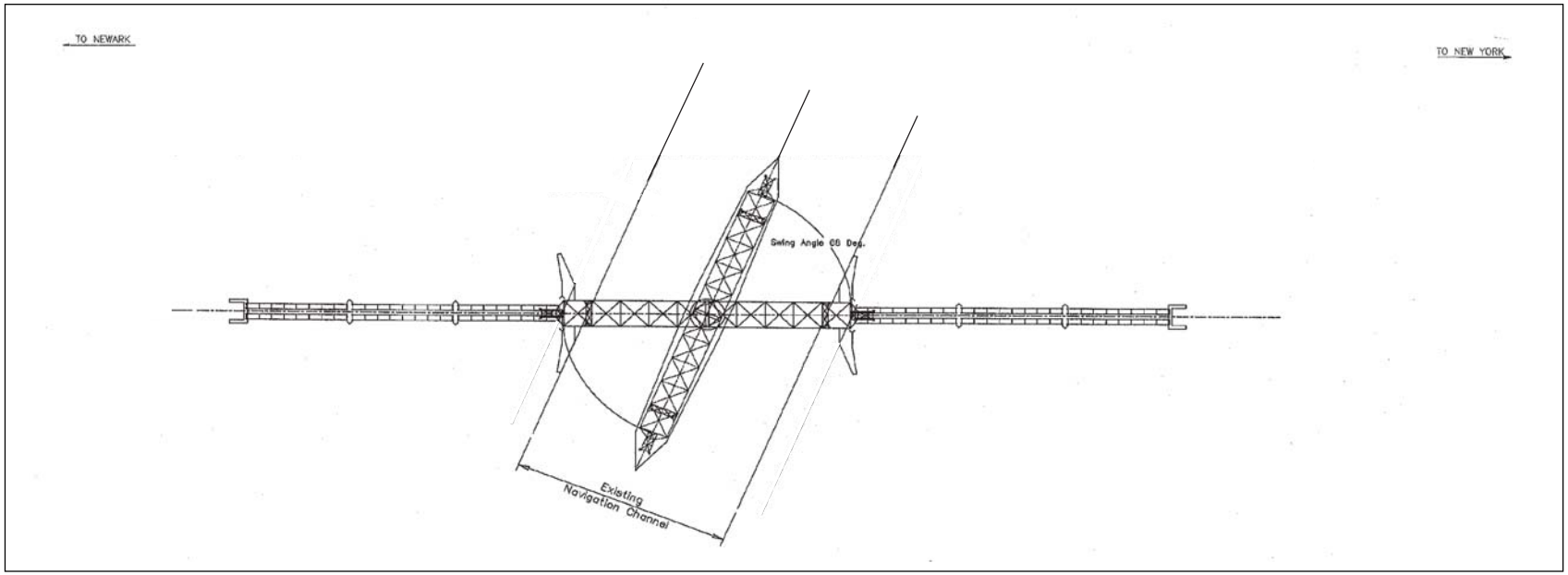
Project Study Area
Figure 3-1

12.12.07



EXISTING BRIDGE (ELEVATION)

0 100 FEET
SCALE



EXISTING BRIDGE (PLAN)

0 100 FEET
SCALE

Existing Bridge Plan and Elevation
Figure 3-2

programmed for completion in the near future, as well as planned improvements that are included in the long-range regional transportation plan. Small-scale projects may include "state-of-good-repair" maintenance and improvements to switches, signals, tracks, and platforms. These additions achieve some additional capacity for the rail system, reduce dwell times, and add to system redundancy. Major investment projects involve substantial improvements to the transportation system in the region.

MAJOR PLANNED PROJECTS

ACCESS TO THE REGION'S CORE (ARC)

NJ TRANSIT, in partnership with the Port Authority of New York and New Jersey (PANYNJ) has entered preliminary engineering for the ARC project, which will include a new passenger rail terminal adjacent to New York Pennsylvania Station (PSNY), referred to as the New York Pennsylvania Station Expansion (NYPSE), and a new two-track tunnel underneath the Hudson River that will connect with the existing Northeast Corridor east of Secaucus Transfer Station. The ARC project will also include construction of a new platform on the south side of Secaucus Transfer Station and a new loop track, which will allow trains from the Main/Bergen County and Pascack Valley Lines to travel directly into PSNY. Ancillary elements of ARC will include the construction of the new Kearny Yard (to be located to the west of the Hackensack River and used for equipment storage), and the purchase of dual-power electric/diesel equipment to be used on the presently non-electrified Raritan Valley Line to allow "one-seat rides" to NYPSE. The Federal Transit Administration (FTA) is lead agency for the environmental review; FRA is a cooperating agency. The ARC DEIS was issued in February 2007 and a Supplemental Draft Environmental Impact Statement (SDEIS) was published in March 2008. The ARC project is expected to be completed by 2017.

As stated in Chapter 2, "Project Purpose and Need," the ARC project is particularly relevant to the Portal Bridge project since the ARC project would result in additional trains traversing the Portal Bridge. Amtrak and NJ TRANSIT have begun the planning process for their 2030 Operating Plan that would incorporate the additional trains. The 2030 Operating Plan projects additional trains traveling to the combined PSNY/NYPSE in the AM peak hour, as compared to existing 2006 conditions. This will result in a total of 48 Amtrak and NJ TRANSIT trains traveling to PSNY/NYPSE in the AM peak hour and a net increase 16 trains over the Portal Bridge (i.e., from 23 to 39). Because the Portal Bridge Capacity Enhancement Project is independent of the ARC project, the analysis of the proposed alternatives and their potential environmental effects reflect future conditions without the ARC project. As described later in this chapter, the ARC project was considered in the development of the feasible Portal Bridge build alternatives and is considered for its potential to cause cumulative effects.

NEWARK PENNSYLVANIA STATION IMPROVEMENTS

NJ TRANSIT will improve the condition, appearance, and function of Platform E (Track 5), which is primarily used by Raritan Valley Line service at Newark Pennsylvania Station (NPS). This will include repair and restoration of the platform, drainage systems, canopy roof, waiting areas, walls/windows/doors, signage, and lighting. In addition, NJ TRANSIT is also improving passenger connections between the Northeast Corridor and Broad Street Station. A new professional hockey arena with a mixed-use development has been completed.

FARLEY POST OFFICE/MOYNIHAN STATION DEVELOPMENT PROJECT

The Expanded Farley Post Office/Moynihan Station Redevelopment Project, proposed by the Empire State Development Corporation (ESDC), is a comprehensive development initiative to adaptively reuse the historic Farley Post Office Complex, rebuild the New York Pennsylvania Station (PSNY) into a unified transportation facility supported by new commercial development dispersed in and around the station. This would also involve the demolition of the existing Madison Square Garden (MSG), relocating MSG into the western portion of the Farley Complex. There are six sites that are part of the Expanded Moynihan project: the Farley Complex, the Penn Station Block, the Penn East and Penn West sites, Penn Station Service Building/Block 780 and the Morgan Annex. The project would create a major transportation hub (Moynihan Station West in the Farley Building and Moynihan Station East on the MSG site), improve pedestrian circulation and capacity, provide safety amenities at the PSNY complex, and provide additional railroad station capacity where practical. The expanded proposed project also includes the construction of up to 7.5 million square feet of additional commercial development using the available floor area and bonuses related to the Pennsylvania Station block, 2.5 million square feet of commercial and mixed-use development on the One Penn Plaza block, 1.1 million square feet of new retail development over the PSNY facility and an additional 1.7 square feet of primarily residential development resulting from the project's associated rezoning actions. The project would be constructed in two phases, with phase one (including the new station elements in the Farley building and relocation of MSG to the Farley Annex) completed by 2013 and the remainder of the project completed by 2020. A draft Scope of Work for the EIS was issued on October 22, 2007.

NEW YARD CAPACITY IN THE VICINITY OF NEW YORK PENNSYLVANIA STATION

This improvement would allow additional staging/storage of NJ TRANSIT trains adjacent to platform tracks at PSNY through the construction of additional yard capacity. This project, being undertaken by NJ TRANSIT will improve utilization at Platforms 1 through 4 and will be in service by 2011.

NEW YORK PENNSYLVANIA STATION CAPACITY ENHANCEMENTS

To address the crowded stairways and platforms at PSNY, NJ TRANSIT is proposing the construction of a pedestrian connection from Tracks 1 and 2 to an extended West End Concourse, the extension of the existing Central Corridor to West 31st Street, and the extension of Tracks 1 through 4 and lengthening of Platforms 1 and 2 to accommodate longer trains. This project, being undertaken by NJ TRANSIT, will be completed by 2011.

INTRODUCTION OF BI-LEVEL CARS TO NJ TRANSIT

NJ TRANSIT has recently entered into contract to purchase 234 bi-level coaches to expand capacity on its rail system. These cars have up to 15 to 20 percent more seating than the existing coaches used today and are expected to be delivered over the next three years.

WITTPENN BRIDGE REPLACEMENT

The New Jersey Department of Transportation (NJDOT) has recently completed an Environmental Assessment and has entered preliminary design for the replacement of the Wittpenn Bridge (State Route 7), located on the Hackensack River downstream from the Portal Bridge. The proposed bridge would be six lanes wide, along with shoulders and sidewalk space,

and would be 70 feet above mean-high-water (MHW) in the closed position, and 135 feet above MHW in the open position.

OTHER PROJECTS

Although not directly affecting trans-Hackensack River travel, the No Action Alternative also considers other major planned improvements in New York, including the Metropolitan Transportation Authority's (MTA) planned Second Avenue Subway, East Side Access, and Fulton Street Transit Center, along with the PANYNJ planned Permanent World Trade Center PATH Terminal as they affect the ridership forecasts of the NJ TRANSIT/Amtrak 2030 Operating Plan.

MINOR PLANNED PROJECTS

Smaller-scale upgrades to NJ TRANSIT and Amtrak's existing infrastructure along various rail lines are summarized in Table 3-1. These improvements planned to maintain a "state of good repair" are included in NJ TRANSIT and Amtrak's capital programs, and will provide a modest amount of additional rail capacity in the future, and improve service reliability. These improvements include upgrades to switches between tracks, extensions and upgrades of existing platforms, improvements of signals along with the construction of additional tracks.

Table 3-1
Amtrak and NJ TRANSIT's Capital Improvement Program

	Proposed Improvements			
	Switches	**Platforms**	**Signals**	**Tracks**
Bergen County Line	X	N/A	X	X
Gladstone Branch	X	N/A	N/A	X
Main Line	X	N/A	N/A	X
Montclair-Boonton Line	N/A	N/A	N/A	X
Morristown Line	X	X	X	X
Northeast Corridor Line	X	X	X	X
North Jersey Coast Line	X	X	X	N/A
Pascack Valley Line	N/A	N/A	N/A	N/A
Raritan Valley Line	N/A	N/A	N/A	X

Source: NJ TRANSIT's 2025 Capital Improvement Plan

NJ TRANSIT has initiated a system-wide program examining capital investments and other improvements to maximize train operations. These improvements, which are part of the No Action Alternative, include the construction of two additional tracks on the Northeast Corridor between Swift and Rea/Hudson Interlockings (west of the New Jersey Turnpike).

There is one minor highway project incorporated into the NJTPA TIP in the project study area. Funding has been allocated for the next four years for interim repairs to the superstructure of the Pulaski Skyway. This includes repairs to decking, structural steel, and electrical safety, as well as the installation of protective netting over the New Jersey Turnpike, among other things.

OTHER PROJECTS

The following projects, if implemented, would affect regional travel in the area and therefore they would have some effect on rail demand over the Portal Bridge. They are not included in the

No Action Alternative because planning efforts for these projects have not yet advanced enough and/or no specific build alternative has been identified. There will, however, be ongoing coordination between the sponsors of the Portal Bridge project and the sponsors of the following projects:

- **Exclusive Bus Lane (XBL) Capacity Enhancement Study.** PANYNJ is evaluating options for expanding capacity of the existing XBL into the Lincoln Tunnel. Future expansion of this facility would be limited by the physical constraints in New Jersey; however, some expansion is being studied.
- **The Tappan Zee Bridge/I-287 Corridor DEIS.** The New York State Department of Transportation (NYSDOT) is leading the preparation of a DEIS for the replacement of the existing Tappan Zee Bridge over the Hudson River between Rockland and Westchester counties. Several rail options for the new bridge are being evaluated; some of them could provide improved rail access from Rockland and Orange counties to Grand Central Terminal in east Midtown.
- **Penn Station Access Study.** Metro-North Railroad is conducting a Major Investment Study/Draft Environmental Impact Statement (MIS/DEIS) to examine alternatives for improving access between the Metro-North service area east of the Hudson River and PSNY, on the West Side of Manhattan. Four project alternatives are being advanced through concept-level engineering and environmental impact analysis. The proposed new Metro-North service into PSNY could impact available capacity at the station.
- **Goethals Bridge Replacement Project.** PANYNJ is leading the preparation of a DEIS to examine alternatives for the replacement of the Goethals Bridge which spans the Arthur Kill between Elizabeth, New Jersey and Staten Island, New York. Four alternatives are being advanced into the DEIS, including two single-bridge replacement options and two dual-bridge replacement options.
- **Monmouth-Ocean-Middlesex Project.** NJ TRANSIT is currently preparing a DEIS for the Monmouth-Ocean-Middlesex (MOM) project, which will evaluate commuter rail alternatives for areas within those three central New Jersey counties.
- **New Jersey-Pennsylvania Lackawanna Cut-Off Passenger Rail Service Restoration Project.** NJ TRANSIT issued a Draft Environmental Assessment (December 2006) for the New Jersey-Pennsylvania Lackawanna Cut-Off Passenger Rail Service Restoration project, which will restore passenger rail service along the Lackawanna Cut-Off to Monroe County, Pennsylvania via NJ TRANSIT's Morris & Essex Line.
- **Northern Branch Passenger Rail Restoration Project.** NJ TRANSIT is currently performing an alternatives analysis for a project which would restore passenger rail service on the Northern Branch line from North Bergen to Tenafly.

TRACK CONFIGURATION

The No Action Alternative would not include any changes to the existing track configuration. As described in Chapter 2, "Project Purpose and Need," four of NJ TRANSIT's rail lines—the Northeast Corridor Line, the North Jersey Coast Line, certain Montclair-Boonton Line trains, and certain Morris & Essex Line (which includes the Gladstone Branch and Morristown Line) trains—utilize the Portal Bridge, in addition to Amtrak's Northeast Corridor trains. The current track configuration (shown on Figure 3-3) includes two tracks across the Portal Bridge (Tracks 2 and 3), four tracks at Secaucus Transfer Station (Tracks 3, B, A, and 2), and four tracks near Swift Interlocking (Tracks 5, 3, 2, and 6). Tracks 5 and 6 are Morris & Essex Line tracks that

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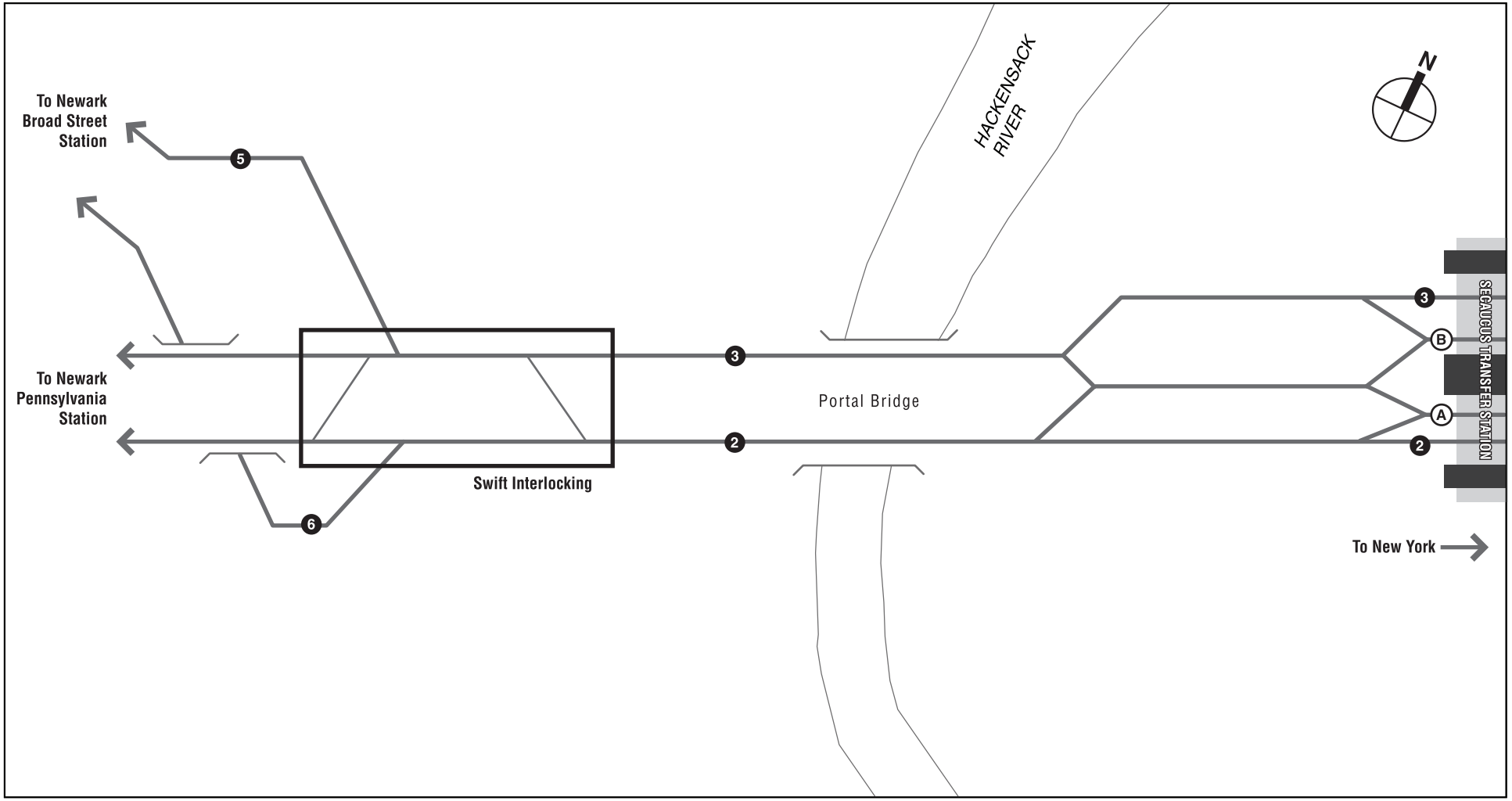

NOT TO SCALE

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PORTAL BRIDGE CAPACITY
ENHANCEMENT PROJECT

Existing Track Schematic
Figure 3-3

continue to Newark Broad Street Station and points west. Tracks 2 and 3 are Northeast Corridor tracks that continue to NPS and points south. Currently, eastbound Morris & Essex Line trains on Track 6 utilize an existing "duck-under" to cross underneath the Northeast Corridor tracks and onto the Portal Bridge. The No Action Alternative would maintain the existing track configuration shown in Figure 3-3. It is assumed that train operations in 2030 would remain as they are today, including 23 trains per hour over the Portal Bridge in the peak hour.

C. BUILD ALTERNATIVES

The build alternatives have been developed to improve the existing Northeast Corridor rail crossing of the Hackensack River. As part of the scoping process, potential project alternatives were identified, evaluated, and screened for inclusion into the EIS. The *Scoping Document* (December 2006) presented general categories of project alternatives that were planned for consideration, including alternatives that would retain, replace, or modify the existing Portal Bridge. Input on the potential project alternatives was solicited during the comment period and at public and agency scoping meetings. The results of the alternatives development process were presented in the *Alternatives Screening Report* (July 2007). The report summarized the two-step alternatives evaluation process that was conducted for the project. The first step was a "fatal flaw" screening that considered the project's logical termini, constructability requirements, navigability requirements, and track requirements. This resulted in a long list of more than 30 possible project alternatives. These alternatives satisfied specific navigability requirements that were established through cooperation with the United States Coast Guard (USCG). Specifically, it was determined that any new fixed bridge in this area must be constructed with a minimum vertical clearance of 50 feet above MHW. A bridge constructed at a lower elevation would need to be a moveable bridge.

The second step in the alternatives screening evaluated the ability of each alternative to meet the project's goals and objectives through application of three criteria—engineering considerations, practical capacity, and environmental and property impacts. All of the alternatives that would retain the existing bridge were eliminated due to operational and engineering concerns. The practical capacity analysis determined that five tracks across the Hackensack River would be sufficient. The second step of the screening also considered the need not to preclude a possible future connection to the proposed Kearny Yard as well as the limited distance between Swift Interlocking and the Hackensack River and determined that a southern moveable bridge and a fixed northern bridge would maximize the operational benefits of the project. The *Alternatives Screening Report* concluded with identification of two feasible alternatives: (1) construction of a two-track moveable bridge on a new southern alignment and construction of a three-track fixed bridge on a new northern alignment; and (2) construction of a two-track moveable bridge on the existing Portal Bridge alignment and construction of a three-track fixed bridge on a new northern alignment. Subsequent to the *Alternatives Screening Report*, these two alignment alternatives were evaluated more closely for engineering, operational, and environmental feasibility, as well as for connectivity with the ARC project. The alternatives for the Portal Bridge project were developed so as to not preclude subsequent construction and operation of the ARC project. Specifically, planned operations of the ARC project that were carefully considered in the Portal Bridge project's alternatives development and evaluation methodology include:

- The requirement that certain Morris & Essex Line trains (the MidTOWN Direct trains) cross the Northeast Corridor over a grade-separated track crossing to connect to/from the new southern platform at Secaucus Transfer Station;

- The termination of dual-power North Jersey Coast Line and Raritan Valley Line trains at NYPSE, and the resulting requirement for a connection between ARC tracks and Northeast Corridor tracks west of the Hackensack River.

Subsequent to completion of the *Alternatives Screening Report,* future train operations without the ARC project were examined and need was established for greater flexibility in moving trains to/from the Morris & Essex Line and all four existing tracks at the Secaucus Transfer Station. Two feasible track variations were identified that met future needs both without and with the ARC project. Because these variations could result in different environmental impacts, four distinct build alternatives are each fully analyzed in this EIS. Since the major components of each alternative (e.g., the two new bridges) are the same, this section includes a description of the elements common to all four build alternatives, followed by a discussion of the differences between each alternative by geographic section.

ELEMENTS COMMON TO ALL BUILD ALTERNATIVES

All of the build alternatives would include the decommissioning and removal of the existing Portal Bridge, in addition to the following project elements:

- Construction of a new three-track fixed northern bridge at a height of 50 feet above MHW and related approach structures;
- Construction of a new two-track moveable southern bridge at a height of 40 feet above MHW and related approach structures;
- A new track configuration between Swift Interlocking and Secaucus Transfer Station, including a grade-separated crossing of the Northeast Corridor;
- New ancillary equipment such as signal and communication systems, traction power supply and distribution, catenary and communication support structures, etc., as required;
- New bridges over Newark Turnpike, former Erie Newark-Paterson Branch right-of-way, Belleville Turnpike, former Erie Arlington Branch right-of-way, and the Boonton Line.[1]

NORTHERN BRIDGE

The new northern bridge would be a three-track fixed bridge. It would consist of three simply-supported steel through trusses. The truss main members would be welded closed-box shapes. The main center span would be 414 feet long and the two flanking side spans would each be 346 feet long, resulting in a total structure length of 1,106 feet (see Figure 3-4). The height of each truss spans would vary from 50 feet high at the ends to a maximum of 60 feet high at the middle of the span (measured from the centerline of the bottom chord to the centerline of the top chord). The highest point of the northern bridge would be 115 feet above MHW. The northern bridge would be 51 feet in width, as measured from center of truss to center of truss. This would provide 14 feet of clearance between the track centerlines and 10 feet of clearance from the centerline of the outside tracks to the inside face of the truss.

The tracks on the northern bridge would be ballasted and a reinforced concrete deck would be used to contain the ballast. The supporting floor system would consist of welded plate girder floor beams and rolled shape stringers. The distance from low steel to top of rail would be

[1] The Boonton Line, which is owned by Norfolk Southern, is also known as NJ TRANSIT's former Boonton Line or the Erie Railroad's Greenwood Lake Line. Apart from historic references in Chapter 5.2, "Historic Resources," it will be referred to as "the Boonton Line" in this document.

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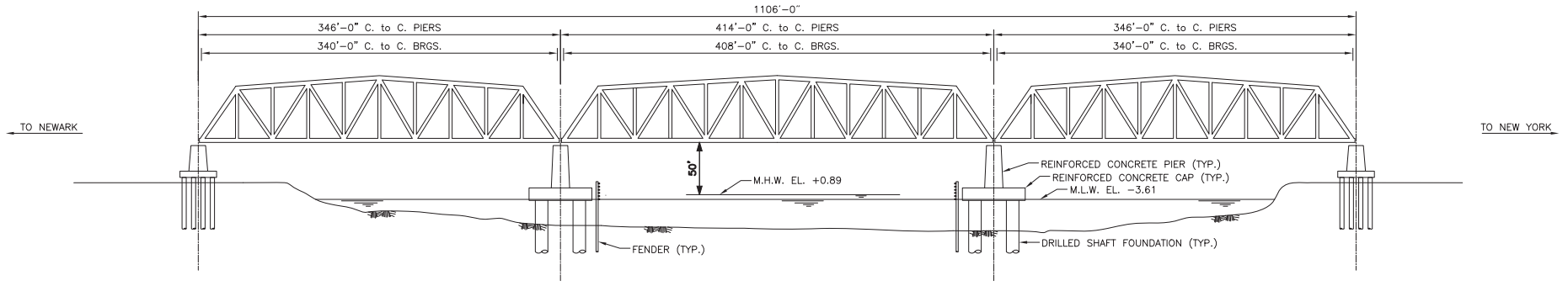
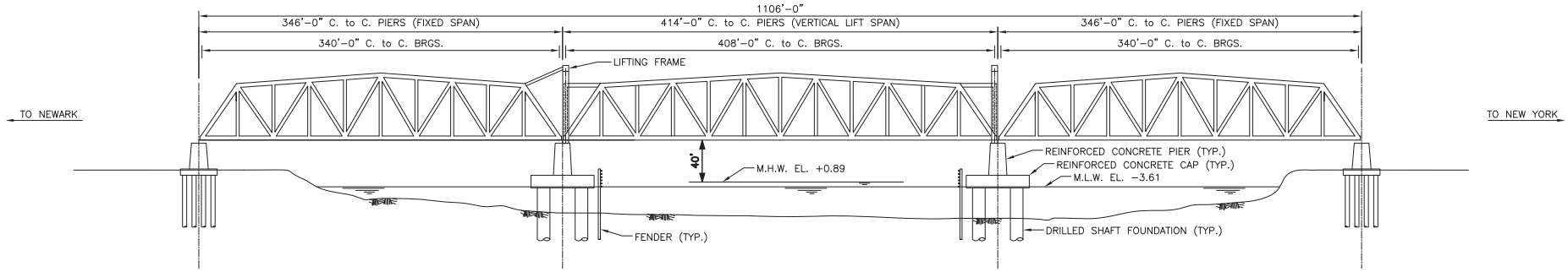


PROPOSED NORTHERN BRIDGE (ELEVATION)



PROPOSED SOUTHERN BRIDGE (ELEVATION)

0 100 FEET
SCALE

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PORTAL BRIDGE CAPACITY
ENHANCEMENT PROJECT

Proposed Northern and Southern Bridges
Figure 3-4

roughly 15 feet. A vertical clearance of 26 feet would be provided from top of rail to the bottom of the truss sway bracing. Cantilevered maintenance walkways would be provided on either side of the bridge.

The bridge span length would allow for an increased navigable channel with 300 feet of horizontal clearance and 50 feet of vertical clearance (from low steel to MHW). The substructure of the northern bridge would be a reinforced concrete pier and pier cap with drilled shaft foundations. The drilled shafts under the main span would be 12 feet in diameter and each pile cap would be approximately 96 feet long by 60 feet wide. The piers would be roughly 40 feet tall as measured from the top of the cap to the top of the pier. The drilled shafts supporting the ends of the approach spans would be 4 feet in diameter. The pier caps that would rest on top of the drilled shafts would each be 68 feet long by 44 feet wide. A fire-resistant fender system would be provided for the main span to protect the substructure from potential vessel collision.

SOUTHERN BRIDGE

The new southern bridge would be a two-track moveable bridge at a lower elevation than the northern bridge. Unlike the existing swing-span moveable bridge, the new southern bridge would be a lift bridge (see Figure 3-4). The main span would be a vertical lift through truss and the two flanking side spans would be simply-supported fixed-span through trusses. The length and height of the truss spans would be the same as those of the northern bridge. The highest point of the southern bridge would be 110 feet above MHW in the closed position and 115 feet above MHW in the open position. The bridge would be 37 feet in width as measured from center of truss to center of truss. This would provide 14 feet of clearance between track centerlines and 10 feet of clearance from the centerline of the tracks to the inside face of the truss.

The vertical lift bridge would operate by moving the center span vertically upward to allow marine vessels to pass underneath. The vertical lift span (which would not be counterweighted) would provide 40 feet of vertical clearance from low steel to MHW in the down position and 50 feet of vertical clearance in the up position. The span would be lifted with eight hydraulic cylinders, two at each corner. A lifting frame at each end of the lift span would provide stability and guidance to the lift span as it is raised above the piers.

The approach span tracks would be ballasted. As with the northern bridge, a reinforced concrete deck would be used to contain the ballast and the supporting floor system would consist of welded plate girder floorbeams and rolled shape stringers. The distance from low steel to top of rail would be approximately 13 feet. A vertical clearance of 26 feet would be provided from the top of rail to the bottom of the truss sway bracing. The substructure of the southern bridge would be a reinforced concrete pier and pier cap supported by drilled shaft foundations. The basic geometry of the substructure would be the same as for the northern bridge except the piers for the lift span would be wider to accommodate the lifting frame. The piers would be roughly 30 feet tall as measured from the top of the cap to the top of the pier. A fire-resistant fender system would be provided to protect the substructure from potential vessel collision.

ROADWAY AND APPROACH BRIDGES

The build alternatives would also require a number of new bridges over either existing roadways or former rail right-of-ways. In addition, new bridge structures would be required to span two open water areas as well as wetland areas north and south of the existing right-of-way between the Hackensack River and the Boonton Line. These structures would consist of a combination of steel deck and through-girder bridges. The through-girder bridges would be used where additional vertical clearance is needed under the bridge and could not be achieved with a deck

girder bridge. The bridge substructures would consist of reinforced concrete piers, pier caps, and abutments resting on foundations of either drilled shafts or driven piles depending upon specific site conditions.

TRACK RECONFIGURATION

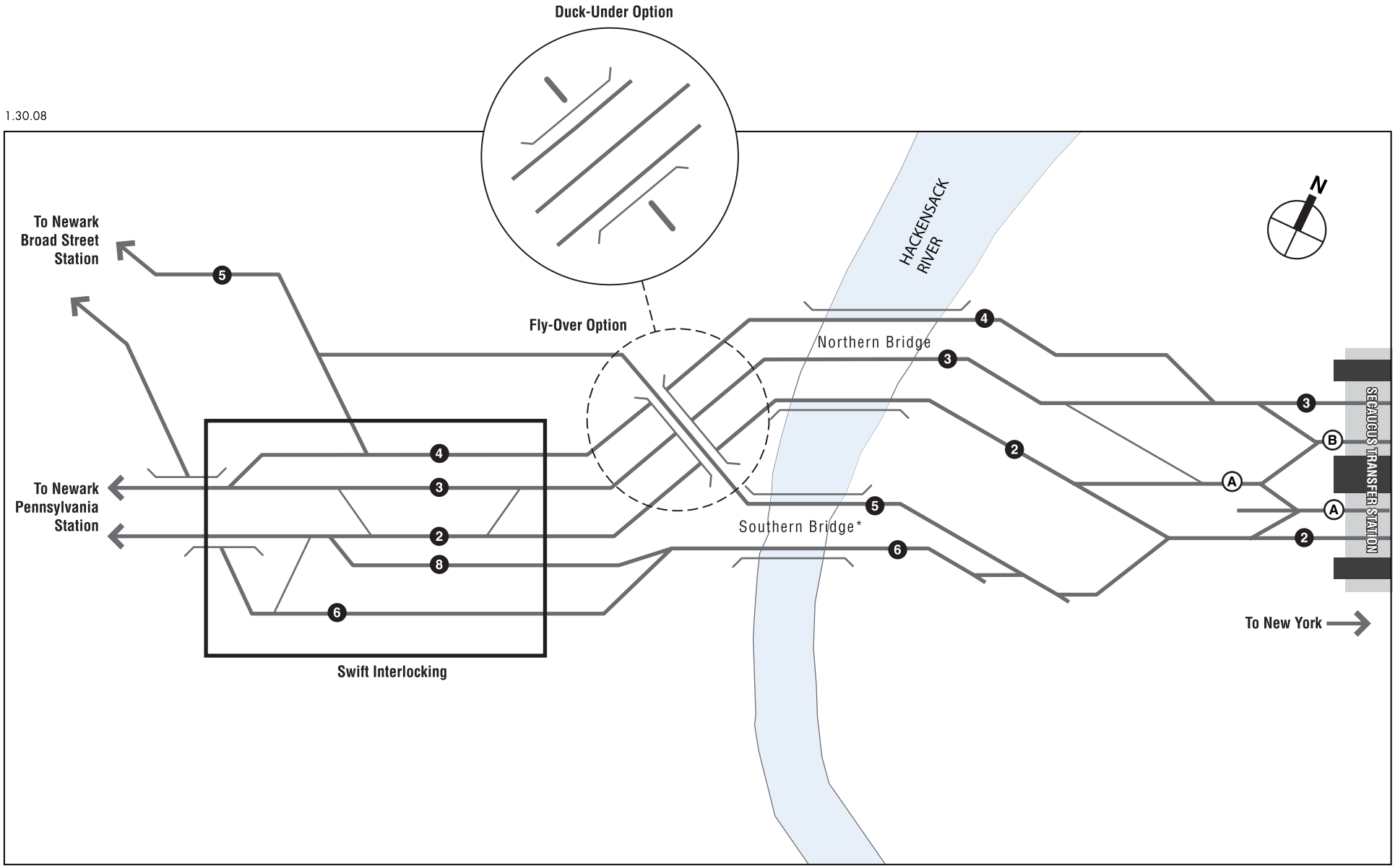
Any of the four build alternatives would require reconfiguration of the existing track connections between Swift Interlocking and Secaucus Transfer Station. As shown in Figure 3-5, the reconfiguration would include:

- Removal of the current two-track bottleneck by providing a minimum of four tracks between Secaucus Transfer Station and Swift Interlocking.
- A grade-separated crossing of Track 5 over or under the Northeast Corridor, to be used temporarily for construction staging and permanently for additional connectivity between the Morris & Essex Line and the Northeast Corridor. The grade-separated crossing is also required so as not to preclude ARC, which would require westbound Morris & Essex Line trains to platform on the south side of Secaucus Transfer Station.
- New track and crossovers that would allow for the normal operation of trains through the corridor.

Under normal circumstances, all Northeast Corridor trains would utilize the northern bridge. All westbound MidTOWN Direct trains (on the Morris & Essex Line) would also use the northern bridge. The southern bridge would be used primarily by eastbound MidTOWN Direct trains, and would also allow connectivity to the potential new southern Secaucus Transfer Station platform that is planned as part of the ARC project. The grade-separated crossing of Track 5 over or under the Northeast Corridor would provide additional connectivity between the southern bridge and the Morris & Essex Line. The grade-separated crossing could be accomplished via a "fly-over" (i.e., Track 5 crosses over the Northeast Corridor) or a "duck-under" (i.e., Track 5 crosses under the Northeast Corridor).

Based on conceptual engineering, the fly-over would consist of a reinforced concrete box structure within an embankment. It would be approximately 46 feet wide measured from inside face to inside face of the concrete walls, sufficient for a single rail track and associated maintenance walkways to pass above the box, and three tracks with walkways to pass inside the box. Depending upon the alternative selected, the box would be 300 to 450 feet long. The box for the fly-over would be approximately 28 feet tall measured from the top of the supporting foundation to the top of the box, leaving approximately 21 feet and 6 inches of vertical clearance, as measured from the top of rail to the bottom of the concrete ceiling of the box. The fly-over structure would be located between the Belleville Turnpike and the western approach of the northern bridge over the Hackensack River.

The duck-under would consist of a reinforced concrete box structure within an embankment. A single rail track would pass through the box. Depending upon the alternative selected, the box would be 500 to 600 feet long. The box would be approximately 25 feet tall measured from the top of the supporting foundation to the top of the box, providing approximately 19 feet of vertical clearance measured from the top of rail to the bottom of the concrete ceiling of the box. It would be approximately 18 feet wide measured from inside face to inside face of the concrete walls, sufficient for three rail tracks and associated maintenance walkways to pass above the box, and a single track with walkways to pass inside the box. The duck-under structure would be located between the Belleville Turnpike and the western approach of the bridge over the Hackensack River. Just east of the intersection with Belleville Turnpike (State Route 7), the



*Southern bridge is shown on existing alignment. In alternatives where the southern Bridge is built off-alignment it would be located farther to the south.

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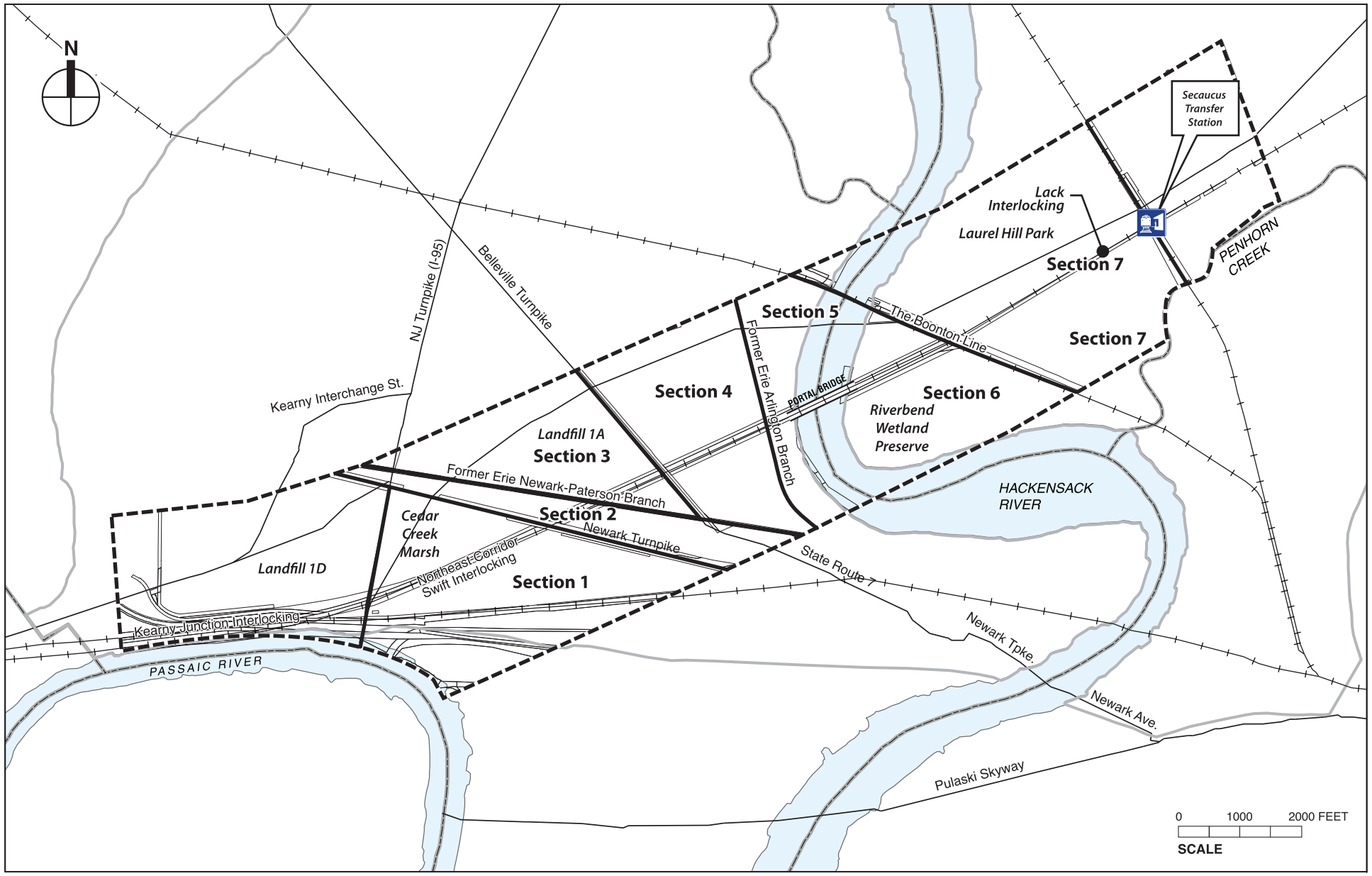
PORTAL BRIDGE CAPACITY
ENHANCEMENT PROJECT

Proposed Track Schematic

Figure 3-5

1.16.08



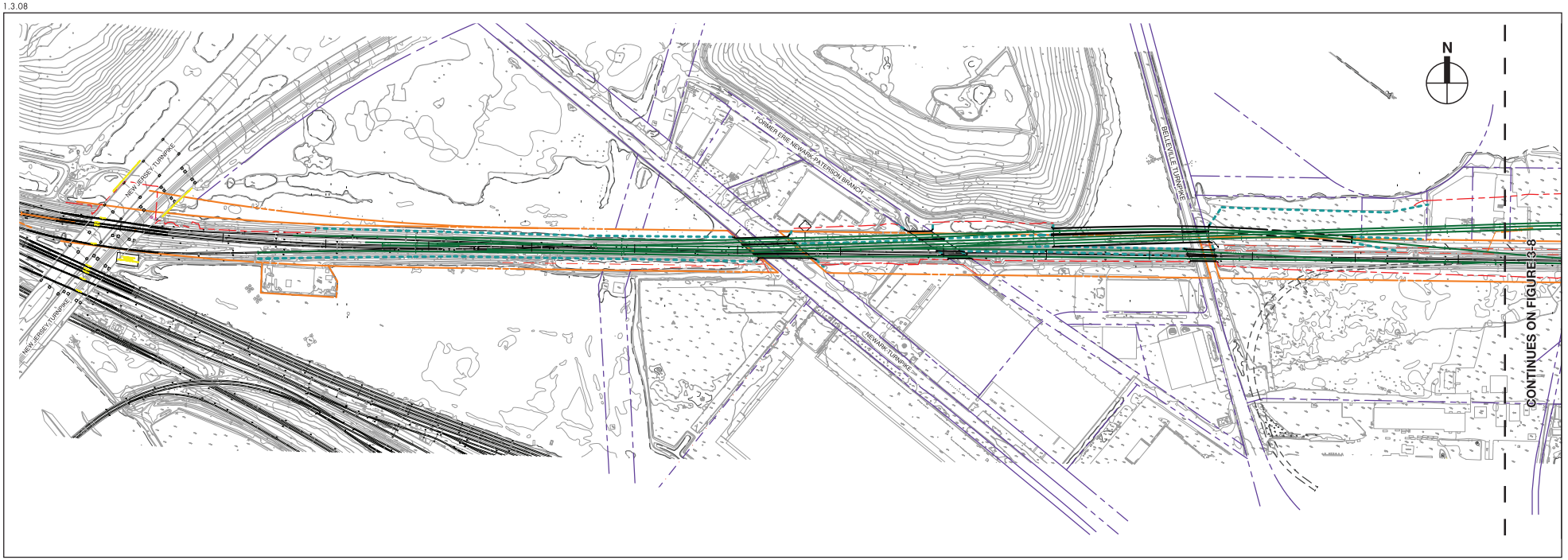
Study Area

NJ TRANSIT
PORTAL BRIDGE CAPACITY
ENHANCEMENT PROJECT

Alternatives by Geographic Section

Figure 3-6

1.3.08



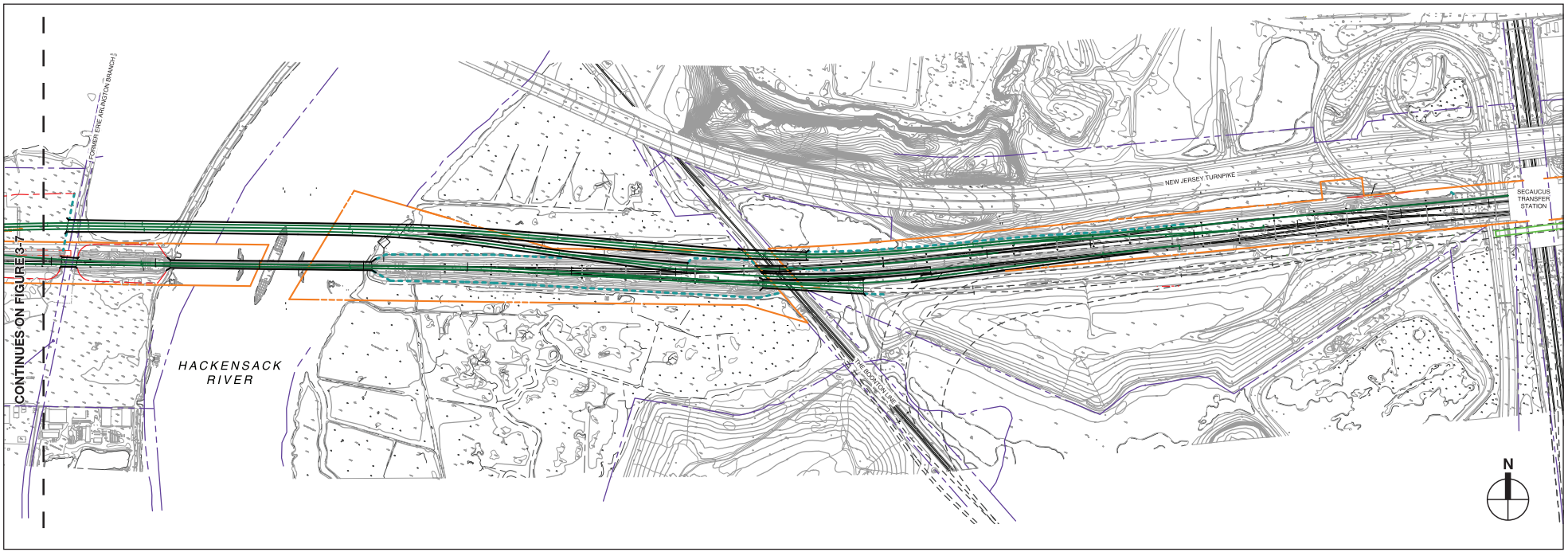
0 200 400 FEET
SCALE

- *Existing Property Lines*
- *Existing ROW*
- *Proposed Centerline Track*
- *Proposed Limit Of Embankment*
- *Proposed Retaining Walls*

NJ TRANSIT
PORTAL BRIDGE CAPACITY
ENHANCEMENT PROJECT

Alternative DE
Figure 3-7

2.4.08



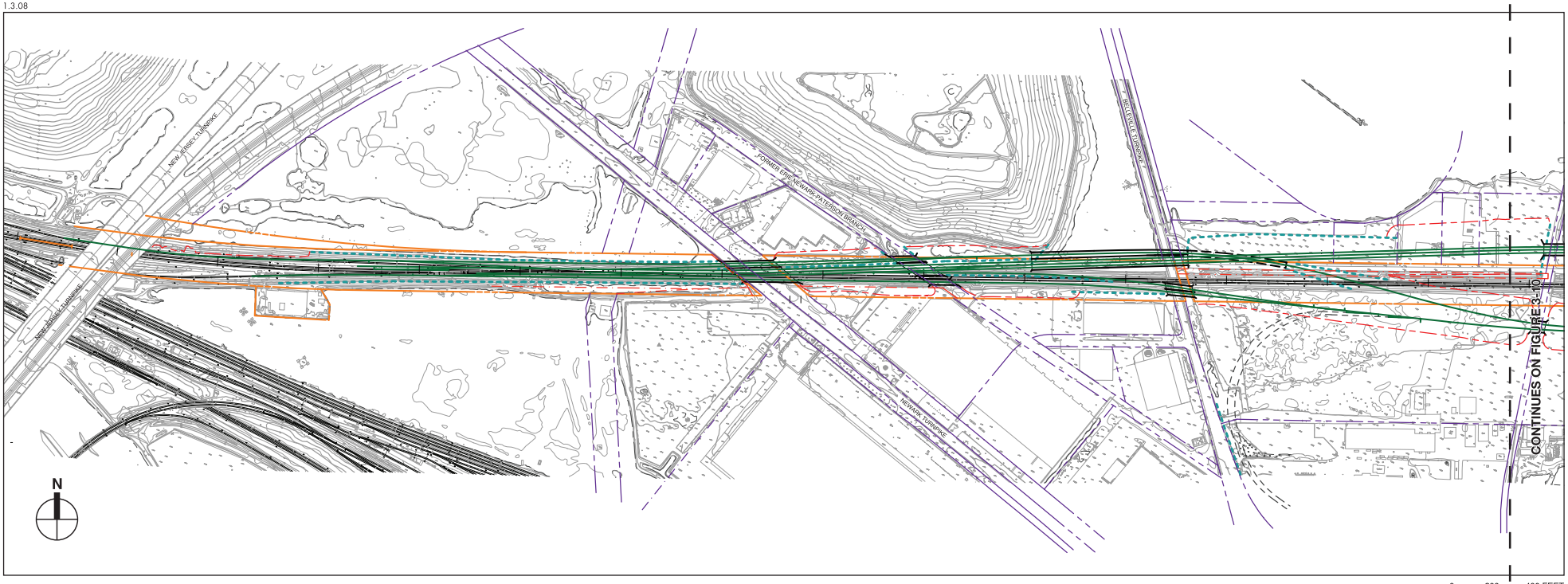
0 200 400 FEET
SCALE

- *Existing Property Lines*
- *Existing ROW*
- *Proposed Centerline Track*
- *Proposed Limit Of Embankment*
- *Proposed Retaining Walls*

NJ TRANSIT
PORTAL BRIDGE CAPACITY
ENHANCEMENT PROJECT

Alternative DE
Figure 3-8

1.3.08



0 200 400 FEET
SCALE

Existing Property Lines
Existing ROW
Proposed Centerline Track
Proposed Limit Of Embankment
Proposed Retaining Walls

NJ TRANSIT
PORTAL BRIDGE CAPACITY
ENHANCEMENT PROJECT

Alternative DS
Figure 3-9

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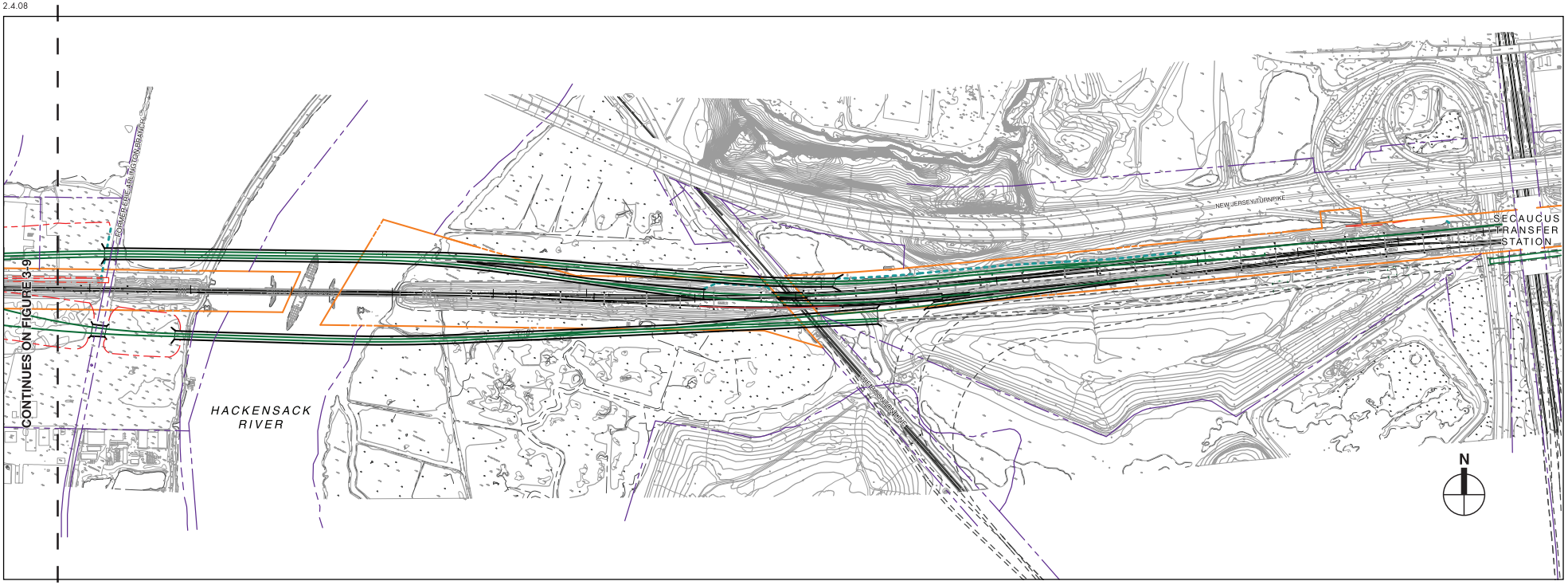

- *Existing Property Lines*
- *Existing ROW*
- *Proposed Centerline Track*
- *Proposed Limit Of Embankment*
- *Proposed Retaining Walls*

NJ TRANSIT
PORTAL BRIDGE CAPACITY
ENHANCEMENT PROJECT

Alternative DS
Figure 3-10

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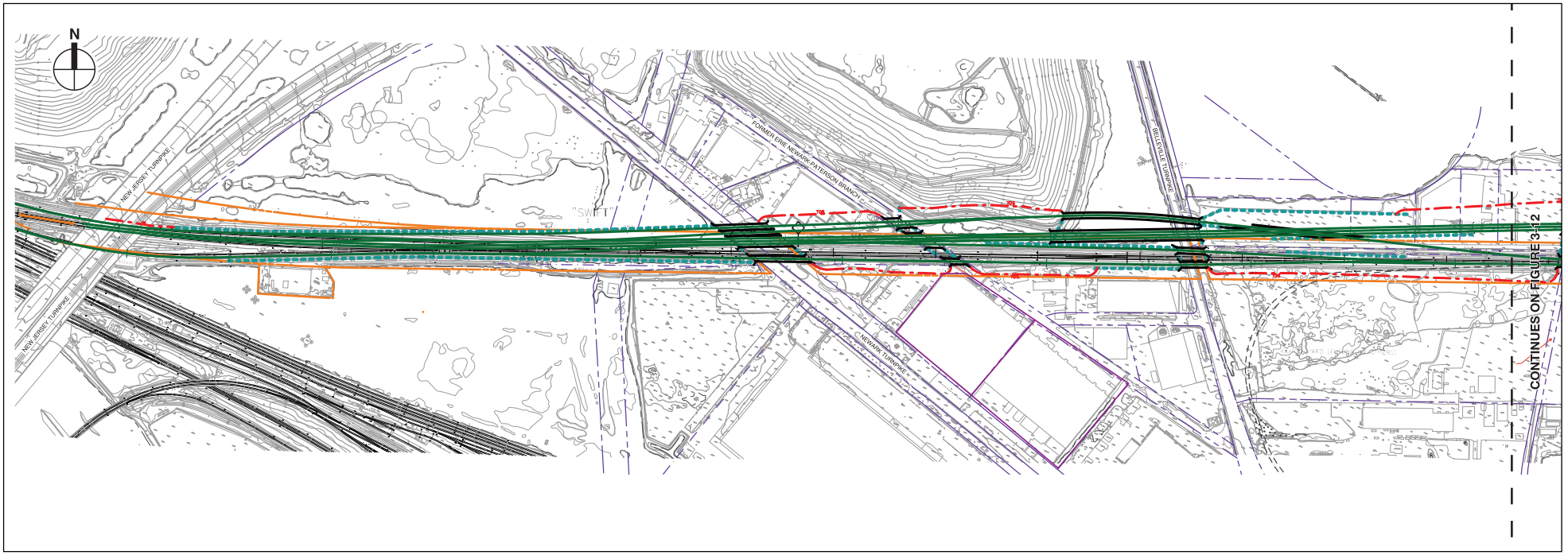


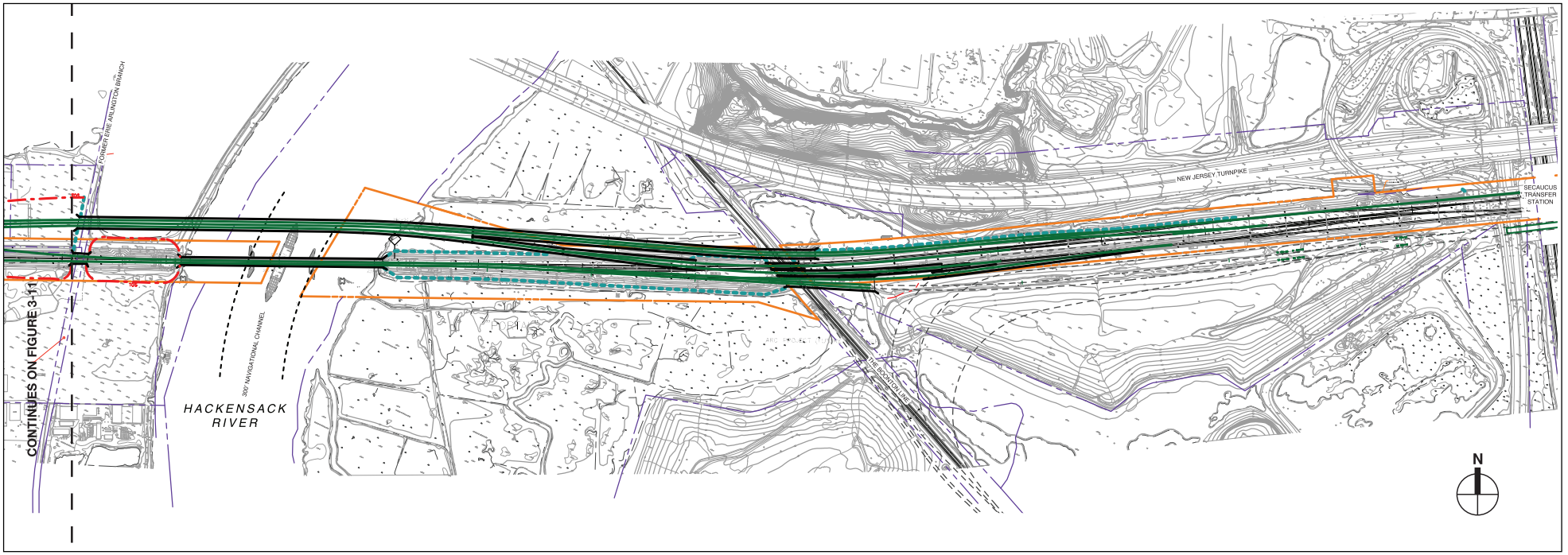
0 200 400 FEET
SCALE

Existing Property Lines
Existing ROW
Proposed Centerline Track
Proposed Limit Of Embankment
Proposed Retaining Walls

NJ TRANSIT
PORTAL BRIDGE CAPACITY
ENHANCEMENT PROJECT

Alternative FE
Figure 3-11

2.4.08



- Existing Property Lines
- Existing ROW
- Proposed Centerline Track
- Proposed Limit Of Embankment
- Proposed Retaining Walls

NJ TRANSIT
PORTAL BRIDGE CAPACITY
ENHANCEMENT PROJECT

Alternative FE
Figure 3-12

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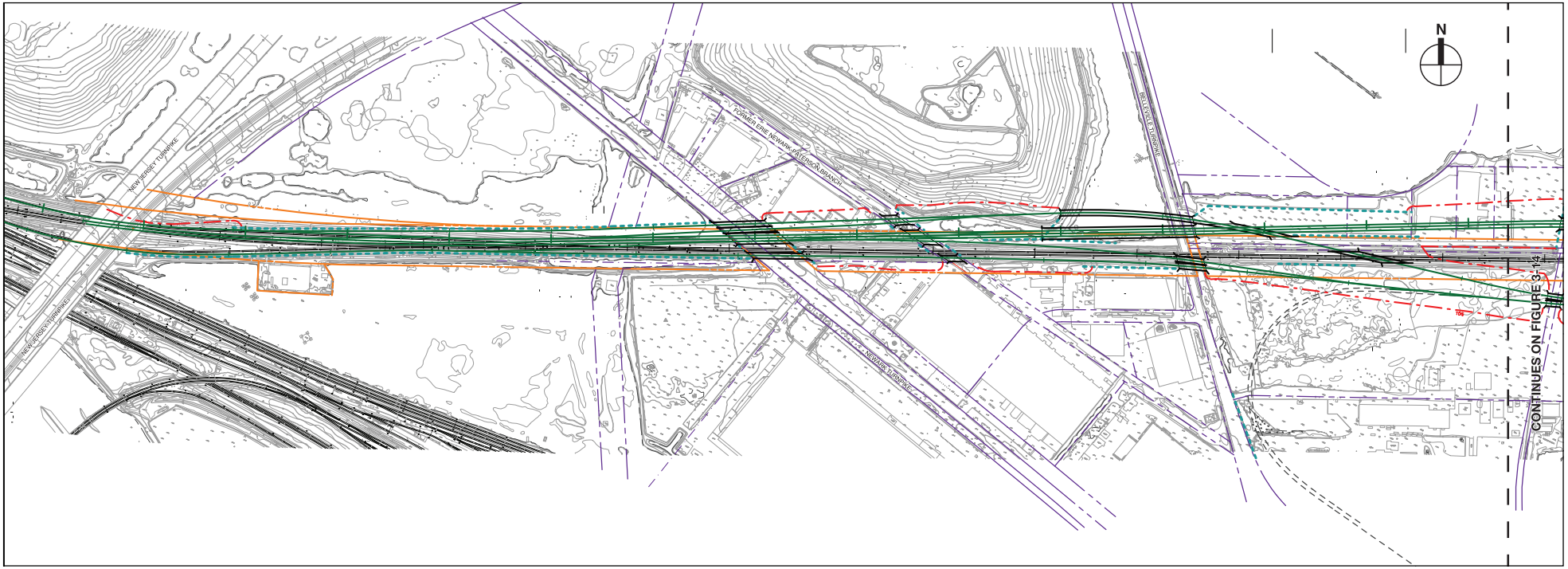
N
NEW JERSEY TURNPIKE
NORTH EAST CORRIDOR
NORTHEAST CORRIDOR
NORTH JERSEY COAST LINE
NEWARK TURNPIKE
PORT JERSEY BRANCH

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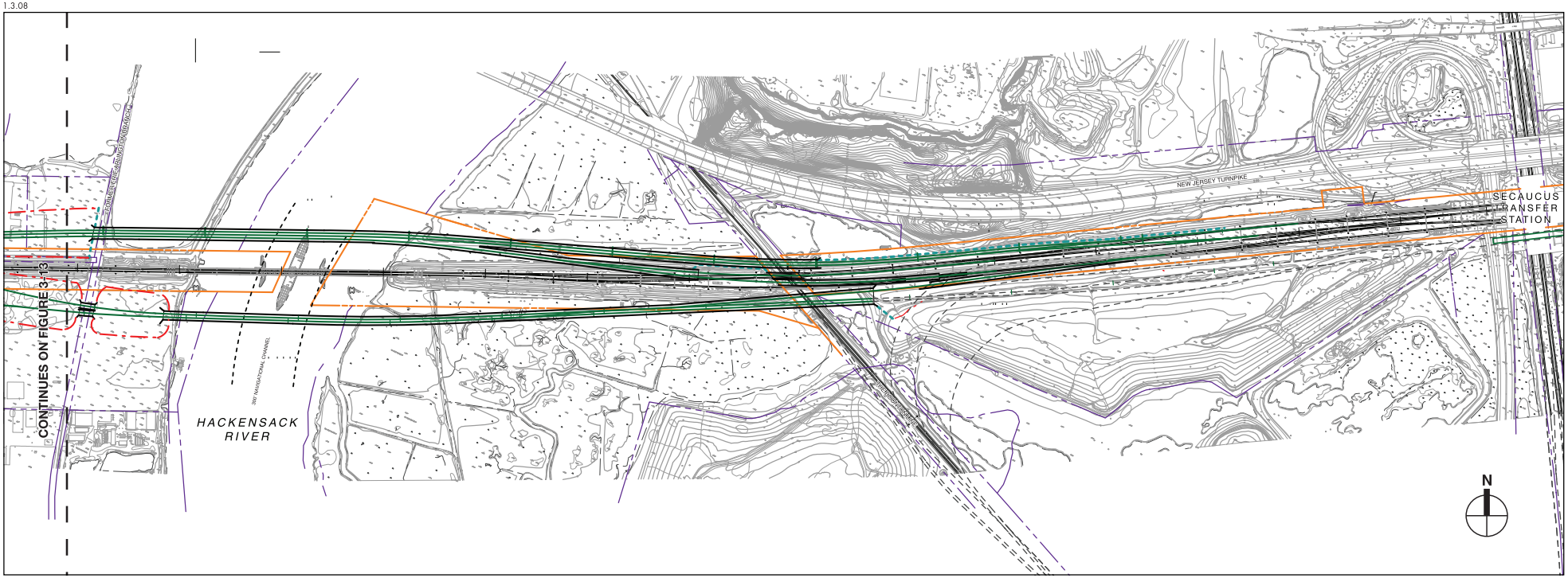


- *Existing Property Lines*
- *Existing ROW*
- *Proposed Centerline Track*
- *Proposed Limit Of Embankment*
- *Proposed Retaining Walls*

NJ TRANSIT
PORTAL BRIDGE CAPACITY
ENHANCEMENT PROJECT

Alternative FS
Figure 3-14

duck-under track would intersect with the Northeast Corridor, which would be constructed on top of embankment.

DESCRIPTION OF ALTERNATIVES

The four build alternatives differ primarily in two respects: the location of the southern bridge (either on the alignment of the existing Portal Bridge or on a new southern alignment) and the type of grade-separated crossing provided for Track 5 (duck-under or fly-over). For purposes of nomenclature, the four build alternatives are referred to in this EIS as follows:

- **Preferred Alternative DS.** This alternative, identified in Section F below and in Chapter 9 as the preferred alternative, includes a three-track fixed northern bridge, a two-track moveable southern bridge built on a new southern alignment, and a duck-under structure for Track 5;
- **Alternative DE.** This alternative includes a three-track fixed northern bridge, a two-track moveable southern bridge built on the existing alignment, and a duck-under structure for Track 5;
- **Alternative FE.** This alternative includes a three-track fixed northern bridge, a two-track moveable southern bridge built on the existing alignment, and a fly-over structure for Track 5;
- **Alternative FS.** This alternative includes a three-track fixed northern bridge, a two-track moveable southern bridge built on a new southern alignment, and a fly-over structure for Track 5.

While all the alternatives follow the general track diagram shown in Figure 3-5, they vary in their exact horizontal and vertical alignment as well as the properties they affect. In addition, the track would be supported by different methods depending upon local conditions. A variety of methods is proposed including earthen embankments, retaining walls, short span girder bridges, and long span truss bridges. Wherever feasible and cost-effective, the support methods along each segment were selected to minimize the potential environmental and property impacts. The general alignment and location of each alternative is shown in Figures 3-6 through 3-13. The detailed engineering alignments are presented in Appendix A. The alternatives are described in detail below using existing landmarks for the boundaries of each section (see Figure 3-14).

SECTION 1 – NEW JERSEY TURNPIKE TO NEWARK TURNPIKE

All four build alternatives would have the same track alignment in this section. This section would comprise five main tracks—Track 5 to the north, Track 6 to the south, and Tracks 2, 3, and 4 in the center. Crossovers would be provided between Tracks 6 and 2 to provide connectivity between the Morris & Essex Line and the Northeast Corridor. Three new 125-foot-long bridges would be constructed to carry the tracks over the Newark Turnpike.

All tracks would be constructed on a retained embankment to minimize the effects on wetlands north and south of the existing Northeast Corridor. As described in subsequent chapters, the use of retaining walls in this manner reduces the footprint of the embankment and thereby reduces adverse wetland impacts and property takings. The majority of work in Section 1 would occur within the existing Amtrak right-of-way.

SECTION 2 – NEWARK TURNPIKE TO FORMER ERIE NEWARK-PATTERSON BRANCH

Similar to Section 1, this section would include Track 5 to the north, Track 6 to the south, and Tracks 2, 3, and 4 in the center. A crossover would be constructed between Tracks 2 and 3 in this section. It would be located farther to the west for Alternatives FE and FS than it would for

Alternatives DE and DS (see Section 3). Near the eastern end of this section a crossover from Track 2 to Track 8 would be constructed. All tracks in this section would be constructed on embankment.

Alternatives FE and FS would extend farther to the north in this section due to the approach required for the fly-over structure. Between the DEIS and the FEIS, the track alignment in this area was revised so as not to preclude the possible future extension of Track 4 west of Swift Interlocking. This resulted in a shift of the Alternatives DE and DS alignments further north in this section. Therefore, all four alternatives would extend beyond the northern boundary of the right-of-way and require property acquisition (discussed further in Chapter 5.1, "Land Use and Social Conditions") of an industrial building between Newark Turnpike and the former rail right-of-way. To the south, the embankment would remain within the existing right-of-way, although it would encroach upon an area currently leased by Amtrak to a private entity.

All four alternatives would include three new bridge structures over the former Erie Newark-Paterson Line. Each structure would consist of a single-span 75-foot-long bridge.

SECTION 3 – FORMER ERIE NEWARK–PATERSON BRANCH TO BELLEVILLE TURNPIKE

Similar to Sections 1 and 2, this section would include Track 6 to the south and Tracks 2, 3, and 4 in the center. Track 8, a pocket track (which allows trains merging from one track to another to wait for an available space without impeding other traffic) connecting the Northeast Corridor to the southern bridge, would also be constructed between Tracks 6 and 2 in this section. The grade-separated crossing for Track 5 would be partially located within this section. With Alternatives FE and FS, the track for the fly-over structure would begin to ascend just east of the Former Erie Newark-Paterson Branch. With Alternatives DE and DS, the track for the duck-under structure would begin to descend near Belleville Turnpike. Within this section, Alternatives DS and FS would require Track 6 to be located farther to the south than for Alternatives DE and FE.

Each alternative would require different types of track support in this section. Alternatives FE and FS would include an embankment to the north (where acquisition of portion of a former landfill would be needed) and a bridge across the open water area to the east of the landfill. To the south, Alternatives FE and FS would include an embankment with a retaining wall in the area near the Belleville Turnpike to avoid property impacts.

Alternatives DE and DS would include an embankment to the north (and would also require acquisition of a portion of the former landfill, although less than the fly-over alternatives) and an embankment with a retaining wall along the open water area. To the south, Alternative DE would include an embankment, while Alternative DS would include a combination of embankment and embankment with a retaining wall (to minimize property impacts). For all four alternatives, property acquisitions would be required for the former landfill and open water areas. To the south, construction would be confined to the existing Amtrak right-of-way, but may affect existing lessees of Amtrak property.

New bridge structures over Belleville Turnpike would be required for all alternatives. Four separate 125-foot spans would be constructed to accommodate the six tracks in this area.

SECTION 4 – BELLEVILLE TURNPIKE TO FORMER ERIE ARLINGTON BRANCH

In Section 4, the northernmost tracks would be Tracks 4, 3, and 2 (respectively from the north) and Track 6 would be the southernmost track. Track 5 would cross Tracks 4, 3, and 2 within this section via the fly-over or the duck-under structure. The fly-over structure would be

approximately 300 feet long for Alternative FS and 450 feet long for Alternative FE. The duck-under structure would be approximately 500 feet long for Alternative DS and 600 feet long for Alternative DE. Provisions would be made for a potential future connection to the planned Kearny Yard (to be located on the former Koppers Coke site, shown on Figure 3-1) by construction of two switches along Track 6. These switches would allow the future construction of a connection to Kearny Yard without disruption of train service on Track 6.

For all four alternatives, the portions of Tracks 4, 3, and 2 within this section would be built on a combination of embankment and retained embankment. Track 6 would be constructed on an embankment. Retaining walls may be required in between the tracks for certain alternatives to support the track structures. Some construction within Section 4 would be outside of Amtrak's existing right-of-way. For all four alternatives, acquisition of an industrial property (to the north) would be required and a property leased from Amtrak to a private party may be affected. Alternatives DS and FS would also require acquisition of a portion of the vacant Diamond Shamrock property to the south. All four alternatives would require construction of bridges to span right-of-way of the former Erie Arlington Branch.

SECTION 5 – FORMER ERIE ARLINGTON BRANCH TO HACKENSACK RIVER

All four alternatives would be largely the same within Section 5. Tracks 2, 3, and 4 would be built on a structure and connect to the northern fixed bridge. Tracks 5 and 6 would be constructed on an embankment and would connect to the southern moveable bridge. The northern tracks would be constructed within Amtrak's existing right-of-way. For Alternatives DE and FE, the southern tracks would be built within the existing right-of-way, although Alternative FE would require a portion of this property for construction staging. Alternatives DS and FS would require acquisition of a portion of the adjacent vacant Diamond Shamrock property for construction of a new embankment and related infrastructure.

HACKENSACK RIVER

In all alternatives, the northern tracks (Tracks 2, 3, and 4) would cross the Hackensack River on a fixed steel truss bridge 50 feet above MHW. The southern tracks (Tracks 5 and 6) would cross the river on a moveable lift bridge 40 feet above MHW located either on or south of the alignment of the existing bridge.

SECTION 6 – HACKENSACK RIVER TO THE BOONTON LINE

In Section 6, all alternatives would consist of three tracks to the north (Tracks 2, 3, and 4) and two tracks to the south (Tracks 5 and 6). Midway between the Hackensack River and the Boonton Line, there would be a crossover between Tracks 5 and 6. Approximately 150 feet west of the Boonton Line, a connecting track between Tracks 5 and 2 would diverge off of Track 2. Approximately 300 feet to the west of the Boonton Line, Track A would begin to diverge off of Track 2 in all alternatives. For all four alternatives, Tracks 2, 3, and 4 would be built on an elevated multi-span structure that would essentially be an extension of the main river crossing. For Alternatives DS and FS, Tracks 5 and 6 would be built on an elevated structure to minimize impacts to the adjacent wetlands. To further minimize impacts on the adjacent wetlands, the permanent access road would be located on the existing embankment (in the DEIS, this access road was located in the Riverbend Wetland Preserve). Alternatives DE and FE would not require a structure in this area since Tracks 5 and 6 would be located on a retained embankment within the existing Amtrak right-of-way. These alternatives would require some additional fill in the adjacent wetlands since the existing access road would be eliminated by the expanded

embankment in this area. The permanent access road would be within Amtrak's current right-of-way and no additional property would be required to the south.

All four alternatives would require property acquisition of a portion of the newly expanded Hudson County Park at Laurel Hill north of Amtrak's existing right-of-way. In addition, Alternatives DS and FS would require property acquisition to the south of the existing right-of-way. All four alternatives would include new structures over the right-of-way of the Boonton Line.

SECTION 7 – THE BOONTON LINE TO SECAUCUS TRANSFER STATION

The western portion of Section 7 would include Tracks 2, 3, 4, A, 5, 6 and a connecting track between Tracks 5 and 2. Tracks 4 and 3 would merge midway between the Boonton Line and Secaucus Transfer Station. Track A would continue into Secaucus Transfer Station. The connecting track between Tracks 5 and 2 would merge with Track 2 near Secaucus Transfer Station. Tracks 5 and 6 would continue a short distance over the Boonton Line and stub-end, providing for emergency storage of disabled trains. All four alternatives would include a retaining wall to the north and an embankment to the south within the existing right-of-way.

RAIL SYSTEMS

SIGNALING AND TRAIN CONTROL

The existing signal system on the Northeast Corridor in the vicinity of the Portal Bridge uses in-cab signaling rather than signals installed along the rail right-of-way (i.e., wayside signals) for train control. Information on whether it is safe for the train to proceed, speed restrictions, and other aspects of train control are conveyed directly to the engineer's cab via electrical induction between the train and the rails. Signals are only installed along the right-of-way at interlockings where connections are provided between different tracks.

All build alternatives would require the removal of the existing signal system between Swift Interlocking and Secaucus Transfer Station and replacement with a similar system. Interlocking signals at Swift Interlocking and Lack Interlocking (which provides access to the Boonton Line as well as tracks in Secaucus Transfer Station) would be relocated and replaced. New interlocking signals would be installed for switches that would provide access to and not preclude construction of the proposed Kearny Yard and other ARC project elements. As part of the Portal Bridge project, modifications would be made to Amtrak and NJ TRANSIT's operating control centers to reflect the change in track layout associated with the build alternatives.

COMMUNICATIONS

There are three fiber optic cables located on or parallel to the Northeast Corridor in the vicinity of the Portal Bridge. Two of the cables are located above-ground and attached to the traction power transmission line structures and one is buried parallel to the Northeast Corridor. All three cables would be relocated during the construction of the build alternatives for the Portal Bridge project. Additionally, an existing communications node house including fiber optic modems, telephone extenders, and a radio base station for communications along the Northeast Corridor, would be demolished and relocated in all build alternatives.

TRACTION POWER

Traction power for the Northeast Corridor and short portions of the Morris & Essex Tracks 5 and 6 is provided by two substations located in Hackensack (Sub 42) and in Kearny (Sub 41). These substations would continue to provide power for the Portal Bridge project. With all build

alternatives, the existing overhead wire system that provides traction power to the trains (catenary system) would be removed and replaced with a similar fixed termination style system. New catenary support structures would be provided where use of the existing cantilever and portals is not feasible. For the moveable bridge, a fixed conductor rail system would be used. This system uses the vertical movement of the lift span to break the catenary at the ends of the lift span allowing the span to clear the wire on either side. New aerial cables for signal and traction power would be provided. The existing submarine cable (used to power the existing moveable bridge) would be severed at each end and abandoned in place.

D. CAPITAL COSTS

Estimated capital costs for the four alternatives are shown below in Table 3-2. The costs, which are based on the current conceptual design and have been updated for the FEIS, are categorized in six major areas:

- Guideway—includes all track support structures including bridges, abutments, and foundations, but excluding embankment and their respective substructures and foundations;
- Track—includes ballasted track and special trackwork such as switches and turnouts;
- Site preparation and civil work—includes bridge demolition, track removal, clearing and grubbing, excavation and embankment, utility relocations, drainage, handling, transport and disposal of contaminated materials, wetland mitigation, landscaping, roads and temporary facilities;
- Systems—includes train control and signals, traction power supply and distribution, communications and central control;
- Right-of-way—includes acquisition and relocation costs;
- Soft costs—includes engineering, project and construction management, insurance, legal and force account labor;
- Unallocated contingency; and
- Finance charges including escalation from 2007 to 2008 dollars.

As shown in Table 3-2, the cost of the build alternatives in 2008 dollars range from $1.243 billion to $1.356 billion. The largest increase in the capital cost since the DEIS is approximately $40 million, attributable to updating the project costs to 2008 dollars.

E. PERMITS REQUIRED

Any of the build alternatives would require a number of permits and approvals at the federal, state, and local levels, as shown in Table 3-3. In addition to these permits, the project must comply with numerous laws and regulations including those regarding worker and public safety, relocation procedures, use of parkland and historic resources, and endangered and protected species.

Table 3-2
Capital Cost—Build Alternatives (in Millions)

Cost Type	DS	DE	FE	FS
Guideway	$551	$503	$515	$549
Track	$26	$25	$26	$27
Site/Civil	$152	$150	$160	$159
Systems	$66	$63	$65	$68
Right-of-Way Costs	$15	$7	$13	$16
Soft Costs	$317	$295	$303	$319
Unallocated Contingency	$159	$148	$153	$160
Finance Charges	$58	$52	$55	$58
Total	$1,344	$1,243	$1,290	$1,356

Note: All costs in 2007 dollars with costs escalated to 2008 dollars under finance charges. Guideway includes all track support structures including bridges, abutments, and foundations but not embankment which is included in Site/Civil. Site/Civil includes transport and disposal of contaminated materials and wetland mitigation. Soft costs include engineering, project and construction management, insurance, legal and force account labor.

Table 3-3
List of Potential Federal, State, and Local Permits

Permits/Certifications	Responsible Agency	Activity
Federal		
Section 404 Permit	United States Army Corps of Engineers	Discharge of dredged or fill material into the waters of the U.S.
Section 10 Permit	United States Army Corps of Engineers	Construction of structures in navigable waters
Section 9 Permit	United States Coast Guard	Construction over navigable waters
Hazards to Navigation Assessment	United States Coast Guard	Obstructions in navigable waters
State		
401 Water Quality Certificate	NJDEP	Discharges to surface waters
Waterfront Development/ Coastal Wetlands Permit	NJDEP	Coastal development
Flood Hazard Area Individual Permit	NJDEP	Construction in riparian zone and Flood Hazard Area
Tidelands Conveyance	NJDEP	Activities that affect tidal wetlands
Diversion/Disposal of Parkland	NJDEP	Development in parkland
Sanitary Landfill Disruption Permit	NJDEP	Disturbance of a landfill
NJPDES	NJDEP	Discharge into surface waters
Site Remediation Approval	NJDEP	Approval of the remediation of contaminated sites
Soil Erosion and Sediment Control Plan Certificate	New Jersey Natural Resources Conservation Program	Land disturbance from construction activities

Note: Other permits and approvals from Hudson County and New Jersey Meadowlands Commission may be required.

F. PREFERRED ALTERNATIVE

In selecting a preferred alternative, the four build alternatives and the No Action Alternative were compared and their ability to meet the project goals and objectives that were identified in Chapter 2, "Project Purpose and Need" was assessed. Since the build alternatives were developed in consideration of the these goals and objectives, the differences among alternatives with respect to these are relatively minor. As discussed in Chapter 9, "Preferred Alternative," the selection of a preferred alternative is a function of three issues—environmental effects, construction cost, and schedule. The subsequent chapters of this FEIS measure the environmental impacts of the alternatives, which are compared in Chapter 9. Chapter 9 also includes a detailed analysis of constructability and project schedules that were prepared for the FEIS and considers the cost for each alternative.

As discussed in Chapter 9, the duck-under alternatives (Alternatives DS and DE) are cheaper, operationally superior, and require less right-of-way than their fly-over counterparts (Alternatives FS and FE). The selection of the preferred alternative is therefore a choice between Alternatives DS and DE. In terms of project cost, as shown in Table 3-2, Alternative DS would be approximately $101 million more than Alternative DE when considered in 2008 dollars. However, when the year of expenditure and the time value of money are considered, Alternative DS would be approximately $52 million more than Alternative DE (about three percent of the inflated cost). With the refinements in design and analysis between the DEIS and the FEIS, the differences in adverse environmental effects has also been substantially reduced.

The most substantial difference among Alternatives DS and DE is the construction duration and the potential adverse effects related to prolonging the construction period. Alternative DS would take approximately 66 months while Alternative DE would take approximately 94 months. In addition to the effects on construction cost described above, the additional time required to complete Alternative DE would result in adverse effects for a longer period of time on a number of environmental concerns. The additional 28 months of construction may also result in greater adverse effects on NJ TRANSIT and Amtrak passengers by increasing the time that they may experience disruptions to service or inconvenience.

Alternative DS would enable revenue service for NJ TRANSIT and Amtrak 28 months earlier than Alternative DE. This new infrastructure would improve rail operations and eliminate much of the cause for delays and reliability issues in this portion of the Northeast Corridor. After careful consideration and evaluation, the project sponsors have identified Alternative DS as the preferred alternative for the Portal Bridge Capacity Enhancement Project. The FRA concurs in the selection of a preferred alternative.

✶

A. INTRODUCTION AND METHODOLOGY

This chapter assesses the potential impacts of the project alternatives on transportation conditions in the New York-New Jersey metropolitan area and the entire Northeast Corridor. Since the Portal Bridge is a vital link on the Northeast Corridor, the project alternatives could result in effects over a larger area than many of the other environmental resources examined in this FEIS. The effects of the project alternatives on the capacity and reliability of Amtrak and NJ TRANSIT's crossing of the Hackensack River could have a positive effect on regional and commuter rail travel along the Northeast Corridor. This could lead to changes in travel patterns and modes that are discussed below. Therefore, the transportation impact assessment includes a discussion of regional issues, with a focus on the critical trans-Hudson corridor.

The analysis presented in this chapter includes an evaluation of current and future transportation infrastructure within the project study area, including intercity rail, public transportation (including public and private bus service, commuter and light rail, and ferry services), navigable waters, and the roadway system.

B. EXISTING CONDITIONS

The importance of public transportation (including bus, rail, and ferry) in northern and central New Jersey is reflected in the mode shares for the different types of trips made in the region. As shown in Table 4-1, while intra-New Jersey trips were predominately auto-based, trans-Hudson trips are evenly split between automobiles and public transportation. This illustrates the importance of public transportation in providing access to New York City for employment, entertainment, shopping, education, and other trips.

Table 4-1
2000 Northern New Jersey Daily Total Trips

Mode	Intra-New Jersey Trips		Trans-Hudson Trips	
	No. of Trips	% of Total Trips	No. of Trips	% of Total Trips
Auto	15,182,152	94%	544,938	50%
Rail and Rail-to-PATH	214,821	1%	169,483	16%
Port Authority Trans Hudson (PATH) and Light Rail Transit (LRT)-to-PATH	190,816	1%	149,726	14%
Bus	438,377	3%	191,340	18%
Ferry and LRT-to-Ferry	80,683	1%	25,936	2%
LRT	17,953	0%	--	--
Total Transit Trips	942,650		536,485	
Total Trips	16,124,802		1,081,423	

Sources: Access to the Region's Core DEIS (2007)

INTERCITY RAIL

Amtrak is the nation's only intercity passenger railroad. It operates passenger rail service to over 500 destinations in 46 states on 21,000 miles of routes. Amtrak owns and operates the Northeast Corridor from New York Pennsylvania Station (PSNY) in New York City to Washington D.C., including the heavily used "High Line" portion connecting Newark, New Jersey and New York City and the Portal Bridge at Milepost 6.1. PSNY, which is the busiest station served by Amtrak and the busiest railroad station in the country, accommodates more passengers each working weekday than all three of the major New York City-area airports combined (Kennedy, LaGuardia, and Newark Liberty).

An average of over 69,000 passengers travel on up to 300 Amtrak trains per day across the nation. Amtrak operates daily intercity rail service into PSNY via the Portal Bridge. It operates over 100 trains per day in both directions over the Portal Bridge, including:

- Regional service between Boston, Massachusetts and Newport News, Virginia;
- Keystone Service between New York City and Harrisburg, Pennsylvania;
- Premium, time sensitive Acela service between Boston, Massachusetts and Washington, D.C.;
- Long distance trains to points in the south and Midwest (See Figure 4-1).

PUBLIC TRANSPORTATION

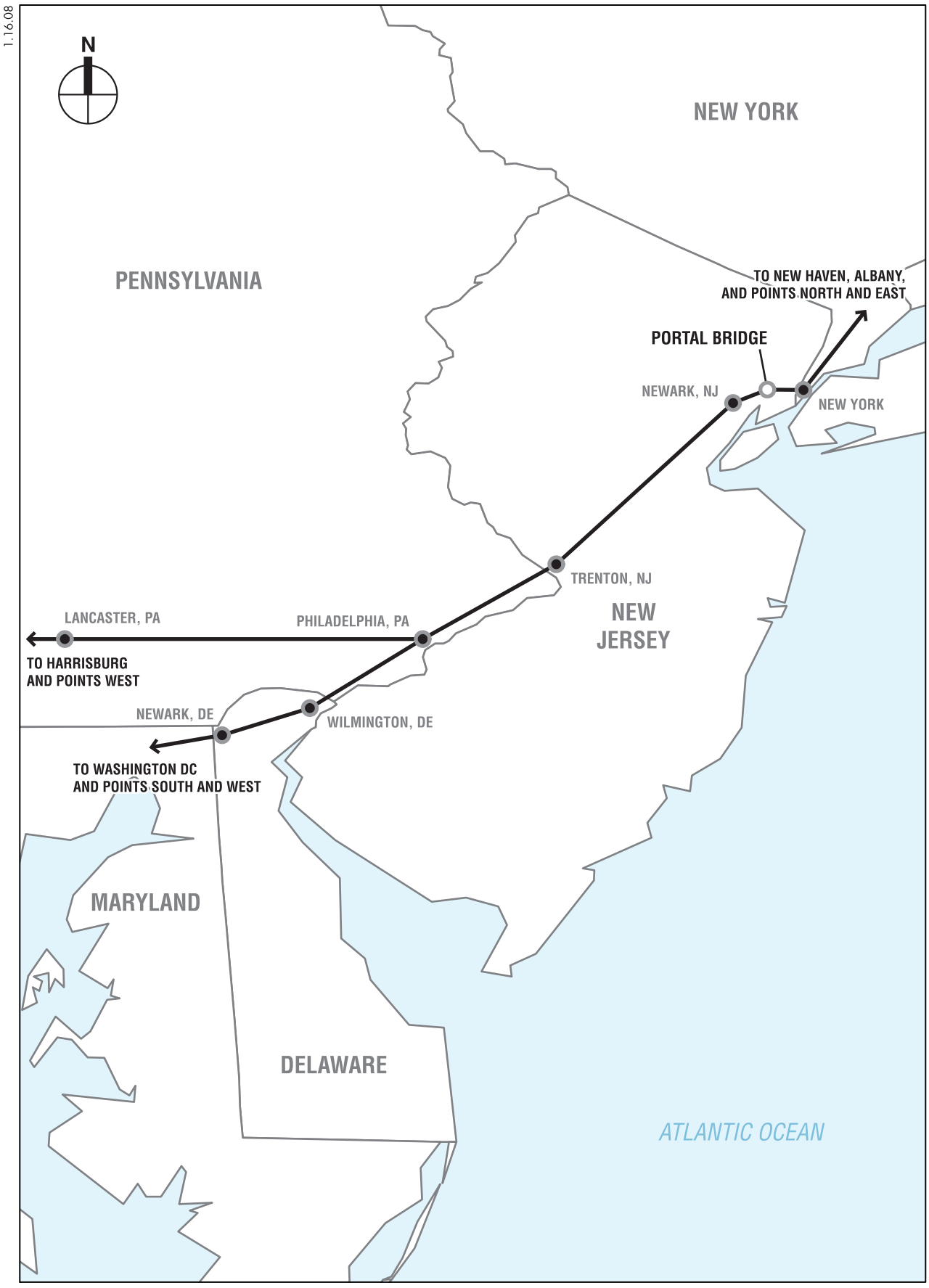
COMMUTER RAIL SERVICE

NJ TRANSIT Commuter Rail

NJ TRANSIT is the nation's largest statewide public transportation system, providing bus, rail, and light rail services that connect major points in New Jersey, New York, and Pennsylvania. Over 800,000 daily trips are provided on NJ TRANSIT's 238 bus routes, 11 commuter rail lines, and 3 light rail lines. NJ TRANSIT carries an average of 150,000 passengers per day in both directions over the Portal Bridge on approximately 350 revenue trains. Additionally, NJ TRANSIT operates approximately 20 non-revenue trains per day over the Portal Bridge.[1]

NJ TRANSIT's commuter rail service in northern New Jersey terminates at one of three stations: Newark Pennsylvania Station (NPS), PSNY, or Hoboken Terminal (see Figure 4-2). All of NJ TRANSIT's Northeast Corridor service and all of Amtrak's trains operate via the Northeast Corridor tracks to PSNY via the existing Portal Bridge. North Jersey Coast Line trains merge onto the Northeast Corridor tracks west of Rahway Station, certain trains continue to PSNY via the Portal Bridge, while other trains diverge off the Northeast Corridor after NPS and terminate at Hoboken Terminal. The Montclair-Boonton Line, Morristown Line, and Gladstone Branch (collectively referred to as the Morris & Essex Lines), operate via the Morris & Essex tracks, which cross the Northeast Corridor west of the New Jersey Turnpike, and terminate at Hoboken Terminal. Certain Morris & Essex Trains, branded "MidTOWN Direct" service by NJ TRANSIT, diverge off the Morris & Essex tracks at Kearny Junction Interlocking, and merge onto the Northeast Corridor at Swift Interlocking, allowing them to operate directly into

[1] Revenue trains are those that are available to the public for transportation. Non-revenue trains are those that are not available to the public for transportation and are being operated to position them for future revenue movements.



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Amtrak Service
Figure 4-1

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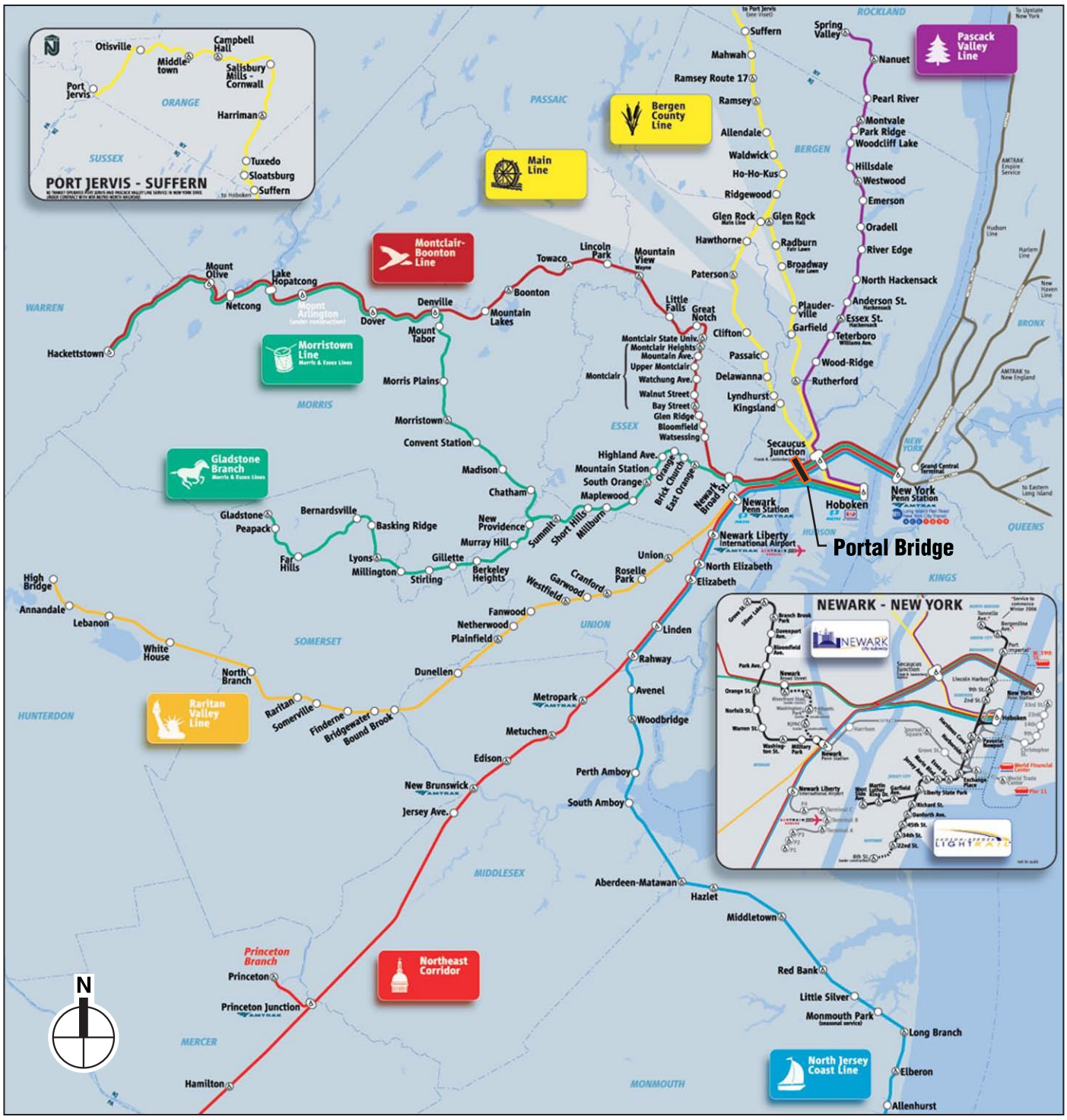


NOT TO SCALE

Portal Bridge

NJ TRANSIT
PORTAL BRIDGE CAPACITY
ENHANCEMENT PROJECT

NJ TRANSIT Rail System
Figure 4-2

Midtown Manhattan and terminate at PSNY. Raritan Valley Line service, which operates with all-diesel equipment, terminates at NPS, allowing for connections to both PSNY and Hoboken Terminal.

NJ TRANSIT's Main/Bergen County and Pascack Valley Lines, which serve counties in the northern part of the state as well as parts of Orange and Rockland Counties in New York (through an operating agreement with Metro-North Railroad) operate via lines outside of the project study area and terminate at Hoboken Terminal. Connection between the Main/Bergen County and Pascack Valley Lines and the Northeast Corridor can be made at Secaucus Transfer Station. Neither the Princeton Branch service (which connects with the Northeast Corridor at Princeton Junction) nor the Atlantic City Line (which operates between Philadelphia, Pennsylvania and Atlantic City) operate within the project study area. Existing NJ TRANSIT ridership is shown in Table 4-2.

Table 4-2
2005 NJ TRANSIT AM Peak Hour (7:30 – 8:30 AM)
Ridership

NJ TRANSIT Lines	Terminal		
	PSNY	NPS	Hoboken
Northeast Corridor and North Jersey Coast Line	10,296	4,263	255
Morris & Essex	4,896	N/A	1,512
Montclair-Boonton	1,188	N/A	819
Raritan Valley	1,320	1,789	N/A
Pascack Valley	220	N/A	1,050
Main/Bergen County	506	N/A	2,310
Port Jervis	163	N/A	714
Total	**18,589**	**6,052**	**6,660**

Sources: Access to the Region's Core DEIS (2007)

Port Authority Trans Hudson (PATH) Service

The Port Authority of New York and New Jersey (PANYNJ) operates an electrified rail transit system, Port Authority Trans Hudson (PATH), between Newark, Jersey City, and Hoboken in New Jersey and Midtown and Lower Manhattan in New York City. PATH operates seven stations in New Jersey, including one in Hoboken and one in Newark, both of which provide for connections with NJ TRANSIT commuter rail service. PATH offers a one-seat ride from its terminal at NPS to Lower Manhattan, and a two-seat ride from Newark to stations in Midtown Manhattan. A one-seat ride is available from its terminal in Hoboken to stations in midtown and downtown.

In Midtown Manhattan, PATH service operates via five stations, including a terminal station at 33rd Street and Sixth Avenue. Service downtown presently operates via the temporary World Trade Center PATH Terminal, which was opened in November 2003 following the destruction of the original terminal on September 11, 2001. Existing PATH ridership between New Jersey and New York is approximately 184,400 riders per day in both directions (to both Midtown and Lower Manhattan).[1]

[1] Source: ARC Transportation Model, 2007.

BUS SERVICE

Bus service into Manhattan operates via the George Washington Bridge as well as the Lincoln and Holland Tunnels to the PANYNJ's George Washington Bridge Bus Station (GWBBS) in northern Manhattan and the Port Authority Bus Terminal (PABT) in Midtown Manhattan.

The majority of bus service from New Jersey to Manhattan uses the Lincoln Tunnel to reach the PABT. In spite of having been expanded by almost 50 percent in the early 1980s, the PABT is operating at or near to capacity today, with over 167,700 people arriving and departing each day.

In the morning, bus service destined for New York from the New Jersey Turnpike can use the exclusive contra-flow bus lane (dubbed the Exclusive Bus Lane or "XBL"), which operates in one of the westbound lanes of New Jersey Route 495. Additional expedited access to the Lincoln Tunnel is provided via the Local Bus Lane (or LBL) which allows buses from local communities near the Lincoln Tunnel to access the tunnel ahead of regular traffic. The XBL is close to exceeding its practical capacity limit of approximately 700 buses per hour. Buses operate so closely together so that any delay or breakdown in service in the XBL can have detrimental effect to trans-Hudson bus service.

FERRY SERVICE

Ferry service between New Jersey and points in New York City is provided by private carriers including: New York Waterways, SeaStreak, and Liberty Water Taxi. Service is offered week days (and in some cases on weekends) between Hudson, Union, Middlesex, and Monmouth Counties in New Jersey and four piers in Manhattan.

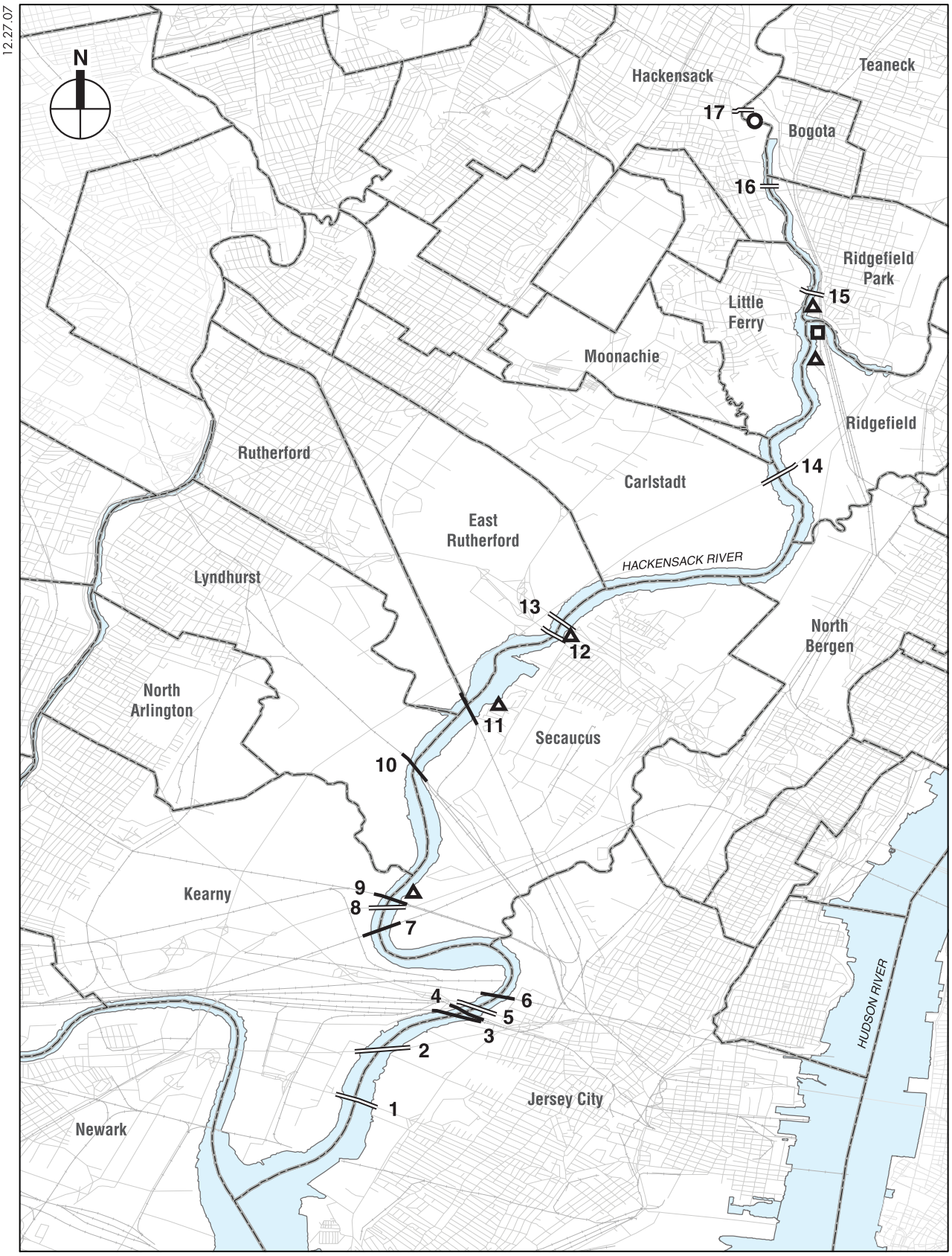
Ferry service can be divided into two types: (1) long distance ferry, which operates from Monmouth and Middlesex Counties to points in Manhattan, and (2) trans-Hudson ferry service between New York City and communities in New Jersey on the Hudson River. In 2005, approximately 35,000 ferry trips were made between New York and New Jersey.[1]

NAVIGABLE WATERS

The Hackensack River—which runs from Rockland County, New York to its mouth at Newark Bay—is a 45-mile long river. The U.S. Coast Guard (USCG) defines the present day "head of navigation" (or point at which the river is no longer navigable to boats) as the dams in New Milford, New Jersey. However, the three moveable bridges in Hackensack (Court Street, New York Southern & Western Railroad and Salem Street Extension) have not been opened in at least ten years and are moveable bridges in name only, making the practical head of navigation the Court Street Bridge in Hackensack, New Jersey. There are a total of 16 bridges between Newark Bay and the Court Street Bridge in Hackensack (see Figure 4-3 and the corresponding Table 4-3). The bridge to the north of the existing Portal Bridge is the New Jersey Turnpike western spur, which has a vertical clearance of 49 feet above mean-high-water (MHW).

Commercial navigation on the Hackensack River is declining as land uses along the Hackensack River change. A number of petroleum shippers located near Bogota, New Jersey have ceased using the Hackensack River to transport goods and materials within the last ten years. Currently the only major manufacturing/industrial uses that use the Hackensack River for transportation of

[1] Ibid.



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Hackensack River Marine Facilities

Figure 4-3

materials are the Amerada Hess facility in Bogota and the Bergen County Sewage Authority in Ridgefield (see Figure 4-3).

Table 4-3
Hackensack River Bridges

		Bridge Name	Location (Miles from Mouth of River)	Bridge Type	Vertical Clearance		Horizontal Clearance
					Open*	Closed	
Bridges Downstream of Portal Bridge	1	Lincoln Highway	1.9	Lift Auto Bridge	135'	35'	200'
	2	Pulaski Skyway	2.4	Fixed Auto Bridge	135'		300'
	3	PATH	3.0	Lift Rail Bridge	135'	40'	168'
	4	Hack Freight	3.2	Lift Rail Bridge	135'	11'	158'
	5	Wittpenn	3.2	Lift Auto Bridge	135'	25'	158'
	6	Lower Hack	3.4	Lift Rail Bridge	135'	40'	150'
	7	Portal Bridge	5.0	Swing Rail Bridge	>135'	23'	99'
Bridges Upstream of Portal Bridge	8	New Jersey Turnpike	5.3	Fixed Auto Bridge	103'		259'
	9	DB Swing	5.4	Swing Rail Bridge	>135'	7'	99'
	10	Upper Hack	6.9	Lift Rail Bridge	110'	8'	127'
	11	HX Draw	7.7	Bascule Rail Bridge	>135'	4'	101'
	12	Rte. 3 EB	8.8	Fixed Auto Bridge	50'		148'
	13	Rte. 3 WB	8.9	Fixed Auto Bridge	50'		150'
	14	New Jersey Turnpike	11.8	Fixed Auto Bridge	49'		165'
	15	Rte. 46	14.1	Bascule Auto Bridge	>135'	35'	150'
	16	Rte. I-80	15.2	Fixed Auto Bridge	51'		148'
	17	Court St.	16.2	Swing Auto Bridge	>135'	3'	56'

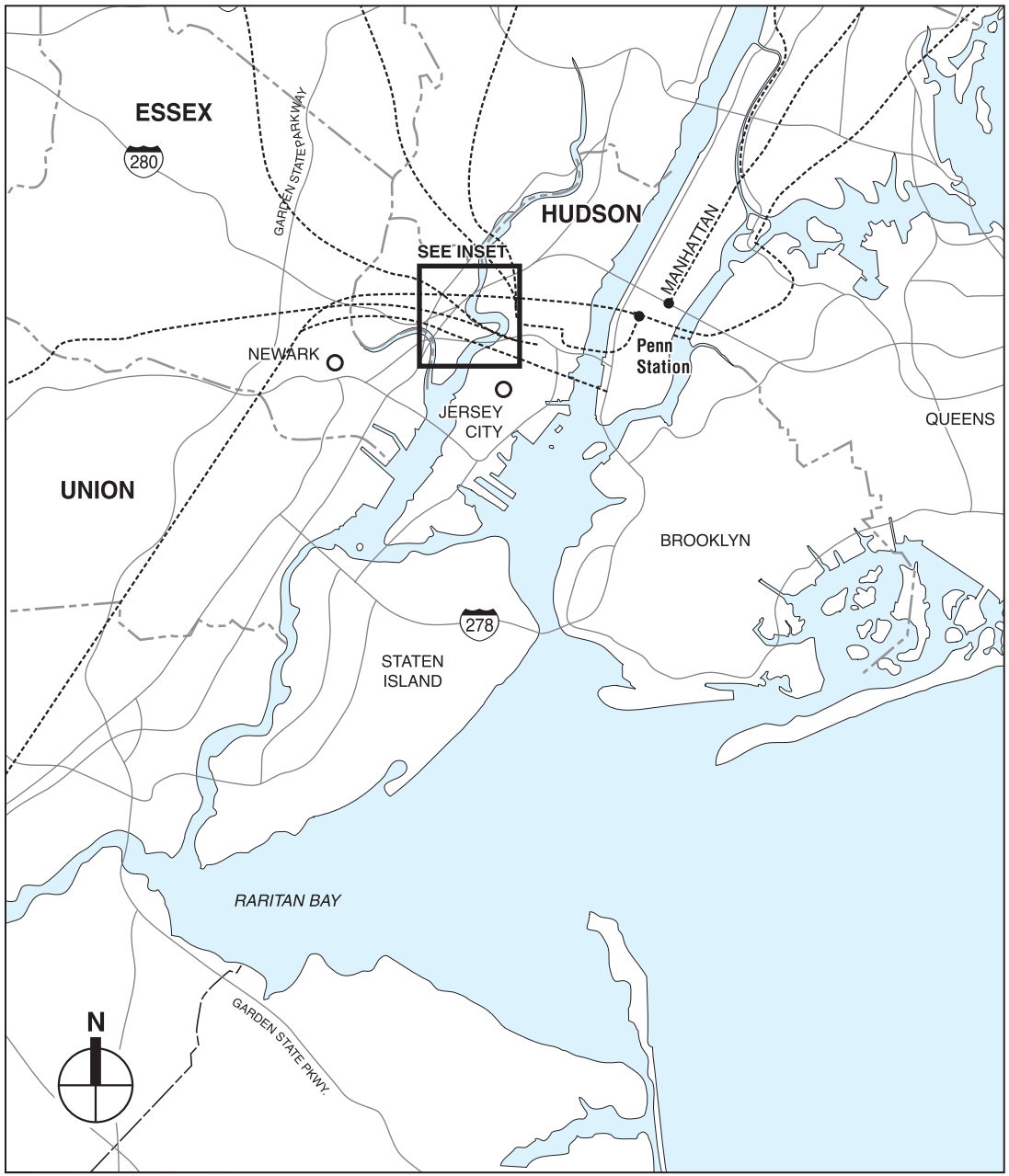
Notes: * Swing-span bridges have an infinite vertical clearance when in the open position, denoted above as >135'.
Sources: USCG, *Passaic and Hackensack Rivers Navigation Chart*, May 1980.

There are at least 11 active pleasure craft marinas along the river, as well as a boat launch for the general public. As the Hackensack River becomes cleaner due to stricter environmental regulations, the nature of pleasure recreational boating along the river has changed and non-motorized uses, such as kayaking and rowing, are becoming more popular. The slow operation of the HX and Upper Hack bridges (both located upstream from the Portal Bridge) induces some pleasure boaters with larger craft to forsake the Hackensack River marinas for those in the port district that is less constrained by low bridges. As discussed in Chapter 2, "Project Purpose and Need," the majority of trips on the Hackensack River requiring the Portal Bridge to be opened were made by boats that were between 35 and 40 feet above MHW.

REGIONAL HIGHWAY SYSTEM

HIGHWAYS

The project study area includes four of the region's major thoroughfares, the New Jersey Turnpike, Pulaski Skyway, Belleville Turnpike, and Newark Turnpike (see Figure 4-4). The New Jersey Turnpike (I-95), part of the interstate highway system, begins in New Jersey at the Delaware Memorial Bridge in the southern part of the state and ends at the George Washington Bridge. In addition to providing for north-south movement through the state, I-95 connects with I-495 which provides access to Manhattan. The section of the New Jersey Turnpike in the project study area splits into two spurs, western and eastern. The eastern spur provides easy access to the Lincoln Tunnel, while the western spur provides for a quicker route to points northward, including the George Washington Bridge.



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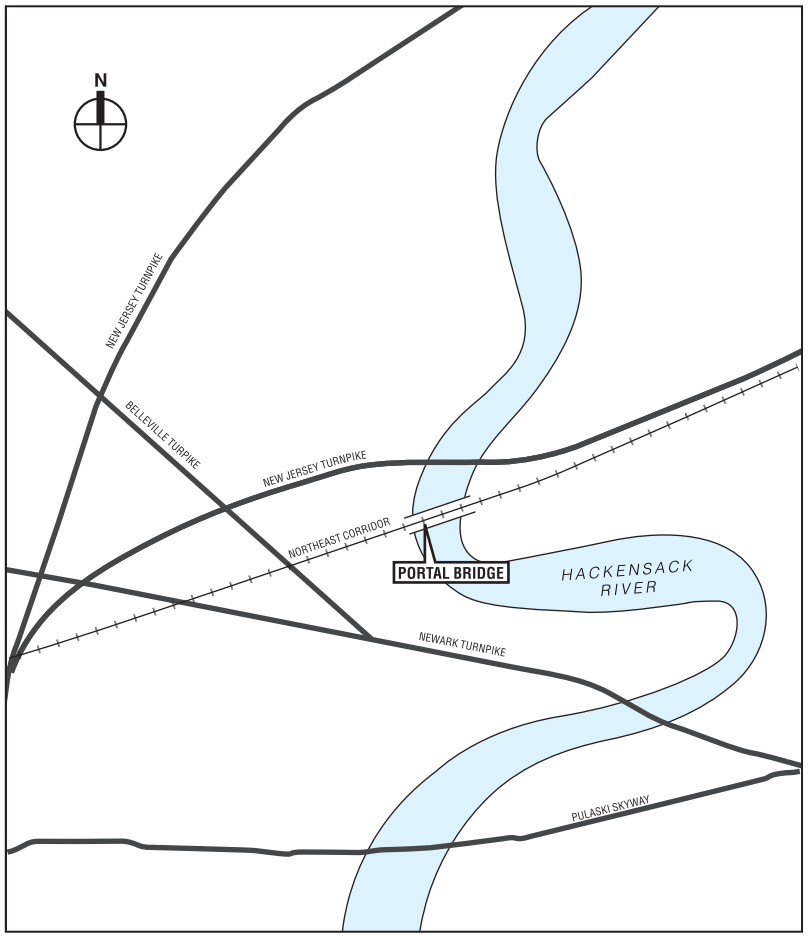

INSET

NOT TO SCALE

NJ TRANSIT
PORTAL BRIDGE CAPACITY
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Regional Highway System

Figure 4-4

The Pulaski Skyway (US-1 and US-9), which begins in Newark and ends at the mouth of the Holland Tunnel, is a major east-west highway that runs through the project study area. In addition to accommodating local traffic between the Newark, Kearny, and Secaucus, this highway serves as a route for automobiles traveling from the New Jersey Turnpike (I-95) and I-78 to the Holland Tunnel. Both the New Jersey Turnpike and the Pulaski Skyway experience major congestion during the AM and PM peak periods.

The Newark Turnpike begins east of the Hackensack River in Jersey City, and terminates in Newark. This roadway, which bisects the Northeast Corridor, provides local access to properties in the project study area and also serves as a link between Newark and Jersey City. The same is true of the Belleville Turnpike, which splits off of the Newark Turnpike south of the project study area and continues northward to Belleville.

All of the major highways described above are congested to varying degrees during peak morning and evening travel periods, even when driving conditions are not adversely affected by weather conditions. Peak-period traffic congestion on these highways has reached the point where even a minor traffic incident can, and frequently does, result in cascading delays to motorists that do not diminish until the peak travel period winds down.

NEW YORK/NEW JERSEY RIVER CROSSINGS

Bridges and tunnels between New Jersey and New York City are owned and operated by the PANYNJ. The Lincoln and Holland Tunnels, as well as the George Washington Bridge, provide direct automobile access between New Jersey and Manhattan. Additional access to New York City from New Jersey is available via the Bayonne, Goethals, and Outerbridge Crossing Bridges.

The crossing with the greatest amount of traffic is the George Washington Bridge, with 109 million vehicles making trips in both directions (eastbound and westbound) in 2006. The Lincoln and Holland Tunnels are the second and third busiest crossings with 44 million and 35 million bi-directional trips (eastbound and westbound) in 2006, respectively (see Table 4-4).

Between 2000 and 2005, heavy congestion on major bridge and tunnel crossings into Manhattan increased from 7 hours per day to 10 hours per day.[1]

Table 4-4
2006 Vehicle Crossings Between New Jersey and New York City

Bridge	Number of Vehicle Trips (Eastbound and Westbound)
George Washington Bridge	108,530,000
Bayonne Bridge	8,426,000
Goethels Bridge	26,050,000
Outerbridge Crossing	32,438,000
Lincoln Tunnel	43,866,000
Holland Tunnel	34,730,000

Sources: PANYNJ, http://www.panynj.com/CommutingTravel/tbt.html, Accessed June 4, 2007.

[1] City of New York, "New York City Mobility Needs Assessment, 2007-2030," 24.

C. NO ACTION ALTERNATIVE

In the future without the project, population and employment in the region will continue to grow, and at least modest improvements will likely be made to the overall transportation network. Projects expected to be completed by the 2030 analysis year include projects listed in Amtrak and NJ TRANSIT's capital program, as well as projects detailed in the North Jersey Transportation Planning Authority (NJTPA) Transportation Improvement Program (TIP) for 2007-2010. These projects are described in detail in Chapter 3, "Project Alternatives." As stated in Chapter 2, "Project Purpose and Need," this EIS assesses the Portal Bridge Capacity Enhancement Project without assuming that the ARC project will be built. Therefore the ARC project is not part of the No Action Alternative. The assessment of the ARC project in conjunction with the Portal Bridge project is addressed in Chapter 7, "Secondary and Cumulative Effects."

POPULATION AND EMPLOYMENT GROWTH

Changes to population occur due to natural changes in the existing population as well as immigration and emigration of residents. Employment changes occur due to changes in size, number or location of businesses as economies grow or shrink throughout the region, and as dominant industries expand or contract. Changes in population and employment in the region affect both the number of trips as well as their distribution throughout the transportation network.

The transportation modeling is based on NJ TRANSIT's North Jersey Transit Demand Forecasting Model (NJTDFM). This is a four-step model in which the first two steps are replaced by a process that develops origin and destination tables based on surveys and model derived data. The model region includes all counties in northern New Jersey (those north of Burlington and Ocean Counties, inclusive); all of New York City, Long Island, as well as Orange, Dutchess, Putnam, Rockland, and Westchester Counties in New York; Fairfield County in Connecticut; as well as nine counties in northeastern Pennsylvania.

Using a combination of modified Metropolitan Planning Organization (MPO) forecasts for New York, New Jersey, Connecticut, and Pennsylvania, population and employment projections were calculated for 2030 for the region that would be affected by service changes to NJ TRANSIT (the "model region"), as shown in Table 4-5.

Table 4-5
2030 Forecasted Percent Change in Population

	Population	Employment
New Jersey	22%	26%
Pennsylvania	18%	26%
New York	17%	20%
Connecticut	18%	12%
Other Areas*	-1.8%	2.2%
Model Region	19%	22%

Notes: * A location for other areas was used in order to account for travel originating or destined for those areas outside of the model region.
Sources: Access to the Region's Core DEIS (2007)

INTERCITY RAIL

Amtrak has no major capital improvements planned for its infrastructure in the project study area, largely because of funding issues. Immediately adjacent to the project study area, two Amtrak projects are underway that upgrade safety and security infrastructure on the Northeast Corridor, including reconstruction of the Weehawken ventilation shaft, and fire and life-safety work in the North River tunnels. In the future without the proposed project, Amtrak will continue to operate three trains in each direction between Washington, D.C., and PSNY during each of the two AM peak hours and a similar number during each of the two PM peak hours, with the potential for expanded service during the off-peak hours. Absent the construction of one of the project alternatives, rail traffic on the Northeast Corridor will continue to be subject to the existing Portal Bridge's maintenance and reliability concerns, which were discussed in Chapter 2, "Project Purpose and Need."

PUBLIC TRANSPORTATION

COMMUTER RAIL SERVICE

NJ TRANSIT Commuter Rail

It is assumed that in the No Action Alternative, NJ TRANSIT will not construct the ARC project. While NJ TRANSIT's operating capacity would increase with the delivery of over 200 double-deck ("multi-level") passenger cars, which provide over 20 percent more capacity than the existing passenger railcars, line-haul capacity along the Northeast Corridor would remain constrained by limitations presented by the existing two-track Portal Bridge. Without an expansion of capacity across the Hackensack River, Amtrak and NJ TRANSIT would only be able to operate approximately 23 trains per hour across the Hackensack River along the Northeast Corridor and into New York. As population and employment in the region continues to grow, there would be an increased demand for rail service. This increased demand will lead to more crowded trains as NJ TRANSIT is limited in the ways it can expand capacity. Finally, NJ TRANSIT service on the Northeast Corridor would still be affected by the reliability and maintenance concerns presented by the existing Portal Bridge. Even if the Portal Bridge were extensively rehabilitated, it would still use miter rails—a technology that is inconsistent with the operating speeds and traffic volume on the bridge today—and would consist of only two tracks, making maintenance difficult to schedule.

Port Authority Trans Hudson (PATH) Service

As was discussed in Chapter 3, "Project Alternatives," PANYNJ intends to implement multiple projects by 2030 which would increase the capacity of their system increasing space for riders making trips in the region and across the Hudson River. Among these projects is implementation of Communications-Based Train Control (CBTC), a significant improvement over the traditional block signal system of train control in use on PATH today. This and other improvements will allow PATH service to accommodate a projected increase in ridership of almost 50 percent, although PATH service would still not be able to accommodate the additional demand and service requirements of commuter rail.

FERRY SERVICE

There are no major planned capacity improvements to ferry service between New Jersey and New York by 2030. By 2030, it is assumed that ferry ridership will see a modest amount of natural growth due to an increase in the regional population.

BUS SERVICE

There are no major planned capital improvements to bus service between New Jersey and New York by 2030. It is assumed that bus ridership will see a modest amount of natural growth due to an increase in the regional population by 2030, but that it will continue to be constrained by capacity problems at the Lincoln Tunnel and at the PABT. PANYNJ is conducting the Exclusive Bus Lanes (XBL) Capacity Enhancement Study to find ways to reduce congestion and expand capacity in the Lincoln Tunnel XBL and connecting roadways. The PANYNJ study of the XBL is not expected to recommend improvements that would significantly expand the number of buses into and out of New York City. Significant physical constraints exist on the XBL, the PABT in New York City, and highways leading to and from the XBL in New Jersey that would limit such future capacity expansions. The right-of-way is surrounded by densely populated residential neighborhoods that would limit widening. PABT is extremely crowded, and cannot handle major increases in passengers or vehicles. Finally, capacity and delay problems exist on the inbound and outbound highways in the evening, when buses are leaving New York City. Together, these constraints would limit future expansion possibilities.

NAVIGABLE WATERS

As is discussed in Chapter 5.1, "Land Use and Social Conditions," the New Jersey Meadowlands Commission (NJMC) Master Plan for the Meadowlands area (including significant portions of the Hackensack River) calls for development of areas along the waterfront that are not-ecologically sensitive. A portion of this land will be developed with recreational uses, including marinas and boat launches, which would increase the amount of recreational river traffic along the Hackensack River. There are no additional commercial marine facilities planned for the Hackensack River. It is expected that marine traffic will continue to see a mix of commercial and recreational uses with recreational uses increasing and commercial traffic remaining stagnant or decreasing. Absent the Portal Bridge project, maritime traffic on the Hackensack River will continue to be subject to the delays due to the low-level moveable bridge that were discussed in Chapter 2, "Project Purpose and Need."

REGIONAL HIGHWAY SYSTEM

As discussed in Chapter 3, "Project Alternatives," there are a few major capital improvement projects slated for the northern New Jersey highway system. Aside from the New Jersey Department of Transportation (NJDOT) Wittpenn Bridge Replacement Project (which is located downstream from the Portal Bridge), the majority of these projects are designed more to maintain the existing highway system, and would provide minimal capacity improvements in the area. As discussed above, the increase in population in the region would increase the number of trips being made both inside New Jersey but also between New York and New Jersey, which would have to be accommodated on an already over-capacity highway system.

ENERGY

As part of NJ TRANSIT's overall system fleet replacement program, NJ TRANSIT has committed to acquire new rolling stock, including new locomotives and Diesel Multiple Units to replace their existing 1980s era equipment as well as dual-power locomotives, all of which would have regenerative braking capabilities which would allow for the return of some energy to the power grid during braking. While the energy savings would vary depending on numerous factors, this new rolling stock would increase energy savings for NJ TRANSIT by anywhere between five and fifteen percent.

The Northeast Corridor is an electrified railroad, and all of the train services operating today between NPS and PSNY employ electric traction. Electricity from the overhead catenary is also used for train heating, lighting, and air conditioning. Despite the fact that much of the electricity presently generated and consumed in the northeastern United States comes from non-renewable sources (an important exception being hydroelectric power imported from Canada), those stationary generating stations are universally more efficient at converting fuels into electricity or mechanical traction power than the mobile engines used in trucks, autos, buses, and even diesel-electric locomotives. The No Action Alternative would leave in place the existing capacity of the railroad but would not capitalize on its significant energy efficiency by expanding its capacity or improving its operational reliability. With the available operating capacity of the Northeast Corridor already at or near saturation during peak weekday travel times, additional growth in local and regional trips by the traveling public would, by necessity, have to be made by other modes once the added seating capacity of the existing trains afforded by independently-planned rolling stock improvements (such as NJ TRANSIT's multi-level coaches) becomes fully subscribed.

D. PROBABLE IMPACTS OF THE BUILD ALTERNATIVES

As discussed in Chapter 3, "Project Alternatives," four feasible build alternatives (Alternatives FE, FS, DE, and DS) have been identified and Alternative DS is the preferred alternative. These alternatives would increase trans-Hackensack River capacity and minimize delays associated with the existing crossing. In addition the build alternatives include track improvements intended to improve rail operations along the Northeast Corridor between Swift Interlocking and Secaucus Transfer Station. These alternatives would, for the most part, provide for similar transportation benefits to both NJ TRANSIT and Amtrak by substantially improving operations at Swift Interlocking and by enhancing capacity and reliability over the Hackensack River, affecting trip times between NPS and Secaucus Transfer Station. Without an associated expansion of capacity from Secaucus Transfer Station to New York City, both NJ TRANSIT and Amtrak would not be able to increase the number of trains they operate on the Northeast Corridor in peak periods. The combined effect of the Portal Bridge project, along with the ARC project and the subsequent ridership benefits, is described in Chapter 7, "Secondary and Cumulative Effects."

INTERCITY RAIL

With the proposed project, Amtrak service would no longer be affected by the reliability concerns that are presented by the existing Portal Bridge. Northeast Corridor train traffic would no longer be interrupted by bridge openings due to marine traffic during off-peak hours (or at all), or by mechanical or electrical failures to the existing bridge's machinery. The construction of the build alternatives would have no adverse effect on intercity rail transportation. With the

elimination of the miter rail connections, speed restrictions on the Northeast Corridor in the vicinity of the Portal Bridge (which were discussed in Chapter 2, "Project Purpose and Need") could be lifted, allowing trains to operate at higher speeds, eliminating a capacity constraint on the rail corridor. Amtrak would be relieved of the increasing expenses and disruptions associated with operating and maintaining one of the oldest swing-span-type railroad bridges in the country and the only one that exists on a high-density passenger rail corridor.

Construction of a grade-separated, or "flying" junction (as proposed), between the Northeast Corridor and the proposed southern alignment at the current site of Swift Interlocking will improve the fluidity of Northeast Corridor operations through this site by greatly reducing the number of merging and diverging train movements that presently occur each day as NJ TRANSIT's MidTOWN Direct trains merge onto, and diverge from, the Northeast Corridor. It is anticipated that the merge point for eastbound MidTOWN Direct service would be moved to a more efficient location (adjacent to Secaucus Transfer Station). This would limit some of the interference caused by the operation of MidTOWN Direct service on the Northeast Corridor tracks.

Increased reliability and speeds for Amtrak on the Northeast Corridor would enable its service to become a more dependable option for short and medium distance trips in the region that are now being made by air. This would to some extent relieve the region's heavily congested airports.

PUBLIC TRANSPORTATION

COMMUTER RAIL SERVICE

NJ TRANSIT Commuter Rail

Much like Amtrak trains, NJ TRANSIT service would also no longer be subject to the reliability concerns presented by the existing Portal Bridge. Trains destined for New York City would operate via either a fixed bridge which would require no openings for marine traffic, or a moveable bridge which would only need to open for a small portion of the existing marine traffic. When openings would occur, the cycle time of an opening would be shorter and much more reliable than the current situation. This is partly because the new bridge would be a vertical lift bridge instead of a swing bridge with an anticipated lift of approximately ten feet, and partly because the bridge's mechanical and electrical apparatus would be new. These increases in reliability and efficiency would allow for an increase in speeds as compared to the existing bridge. Thus, the construction of the build alternatives would have no adverse effect on NJ TRANSIT's rail operations. Moreover, the construction of additional tracks between Swift Interlocking and Secaucus Transfer Station would eliminate certain existing merge points and improve the overall operations of the Northeast Corridor.

Construction of two separate, parallel bridges, both of which can accommodate a mix of intercity and commuter/regional train traffic operated by either Amtrak or NJ TRANSIT would ensure that should one bridge need to be taken partially or totally out of service for scheduled maintenance or due to unforeseen circumstances, the remaining bridge would be able to support all or much of the traffic load despite some inevitable delays.

Port Authority Trans Hudson (PATH) Service

The build alternatives for the Portal Bridge project would have minimal effect on PATH train service. Increasing the efficiency of the Northeast Corridor's Hackensack River crossing by

eliminating the reliability concerns presented by the existing bridge would cause a very small shift from PATH trips between Newark and New York.

FERRY SERVICE

Ferry service would be minimally affected by the construction of any of the build alternatives. As with PATH trains, there would be a very small shift from ferry service to NJ TRANSIT commuter rail service due to the increased efficiency of the Hackensack River crossings.

BUS SERVICE

Bus service in the region would be minimally affected by the build alternatives as a small number of passengers would shift modes due to the increased efficiency of the Hackensack River crossing.

NAVIGABLE WATERS

Construction of any one of the build alternatives would result in the removal of the existing Portal Bridge and its replacement with a new bridge 40 feet above MHW either on the existing alignment or to the south. The build alternatives would also result in the construction of a new fixed bridge at 50 feet above MHW to the north of the existing Portal Bridge. Construction of these two bridges at higher levels above MHW would reduce the number of instances when marine traffic would have to request a bridge opening. In all cases, the build alternatives would include the removal of the existing bridge and removal of its center pier, which would provide for a 300-foot, uninterrupted horizontal clearance across the river channel. This would result in a substantial improvement over the existing Portal Bridge in terms of navigability of the river. With the build alternatives, the number of bridge openings would be substantially reduced. Based on the analysis of present marine traffic, presented in Chapter 2, "Purpose and Need"—only 21 (four percent) of the total openings within the two year period studied would require an opening of the moveable bridge 40 feet above MHW on the lower alignment, while the upper fixed bridge 50 feet above MHW would provide sufficient clearance for all of the current vessels on the river. All of these factors would enhance waterway navigability in the study area and would not represent a detriment to marine traffic on the Hackensack River.

REGIONAL HIGHWAY SYSTEM

The build alternatives would improve rail service but would not measurably reduce vehicle miles traveled (VMT) in the region. Thus the project would not impact the regional highway system. The cumulative projected reductions in VMT for the region combined with the ARC project are discussed in Chapter 7, "Secondary and Cumulative Effects."

SAFETY AND SECURITY

The track alignment in this portion of the project area is surrounded primarily by industrial buildings and wetlands. Amtrak and NJ TRANSIT have provided operating crews with security awareness information and training related to security along the right-of-way. In 2030, surveillance along the alignment would continue.

Additionally, as part of their capital program, Amtrak has substantially completed reconstruction of the Weehawken ventilation shaft, including demolishing existing stairways and ventilation shafts and excavating 80 feet to the roof of the two tunnels. A four-story at-grade structure was

built to house new bi-directional tunnel fans as well as new scissor-type stairways to provide a wider exit in the case of a tunnel emergency or fire. Amtrak has also completed fire and life-safety renovations of the North River tunnels to update portions of its infrastructure.

Two parallel bridges would provide an enhanced measure of safety and security to the rail transportation system itself, since in the event of a failure of one bridge structure, the other could still accommodate some of the rail traffic. This is further enhanced by construction of one fixed bridge, which would have 100 percent availability to rail traffic without adversely affecting marine traffic and would never be out of service due to a mechanical or electrical failure that, however rare, could affect any moveable bridge.

ENERGY

While the proposed project may require additional energy for trains to traverse the higher bridges less energy would be required for operating the moveable structure since it will open much less frequently. In addition, the increase in operational efficiency should result in some modest diversion from auto-related or short-haul air passenger miles which are more energy-intensive than rail travel. However, the greatest energy benefit would be the project's indirect contribution to the potential savings in conjunction with other capacity enhancement projects such as the ARC project. ✷

Chapter 5.1: Land Use and Social Conditions

A. INTRODUCTION

This chapter evaluates the land use and social conditions for areas potentially affected by the project alternatives. This evaluation considers current and future land uses, parkland, zoning, public policy, community facilities, land acquisition, and socioeconomic conditions within the project study area.

Land use is the activity occurring on a particular piece of land and in the structures that occupy the land. Land uses may be categorized broadly (e.g., residential, commercial, manufacturing) or in more detail (e.g., single-family residential, multi-family residential, warehousing, and storage). Zoning is the classification and regulation of land according to use categories, usually developed by local jurisdictions. Zoning controls the type, density, and bulk of development in a given jurisdiction by establishing districts where specific land uses are allowed. Community facilities include churches, daycare centers, police and fire stations, and schools, all of which contribute to the overall character of an area. The regulatory context and methodology for the analysis of land use and social conditions are discussed below, followed by a description of existing and future land use and social conditions, and the potential for impacts from the project alternatives.

B. REGULATORY CONTEXT AND METHODOLOGY

REGULATORY CONTEXT

All of the study area for the Portal Bridge Capacity Enhancement Project is located within Hudson County, New Jersey. Most of the study area falls within the designated Hackensack Meadowlands District. The western half of the study area is located in the Town of Kearny, and the eastern half is located in the Town of Secaucus. Land use planning and public policy in New Jersey are established on the state level by the state's State Development and Redevelopment Plan; within the designated Hackensack Meadowlands District, the regulations and policies of the New Jersey Meadowlands Commission (NJMC) take the place of the state plan as well as any local regulations and policies. Outside the Meadowlands District, local municipalities establish local zoning and land use plans in accordance with the state-wide plan. NJ TRANSIT and Amtrak are not subject to local regulations.

For EIS analyses, the Federal Railroad Administration (FRA) follows guidance provided by the Council on Environmental Quality (CEQ) and internal procedures dated May 26, 1999.[1] These procedures stipulate consideration of a proposed project's impacts on existing and planned land uses. Local land use plans as well as comprehensive regional plans are evaluated with respect to the project to identify conflicts and open space and areas devoted to recreation (passive and

[1] **Source:** http://www.fra.dot.gov/Downloads/RRDev/FRAEnvProcedures.pdf

active) are also identified to determine whether the proposed project could adversely affect these sites.

Following FRA's procedures, EIS evaluations also consider a proposed project's potential to adversely impact the socioeconomic environment—including available jobs (number and type), community disruption or cohesion, demographic shifts, and the need for and availability of relocation housing. The potential impacts on existing businesses and local government services and revenues are also considered.

Transportation projects often require property acquisition and relocation. A federally funded project must adhere to the *Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970*, as codified in Title 42, Section 4601 et seq. of the United States Code, and the applicable implementing regulations set forth in Title 49, Part 24 of the Code of Federal Regulations (collectively, "the Uniform Act") with regard to relocation services, moving payments, replacement housing payments, and other allowable payments related to commercial and residential moving costs and displacement. The rights of owners and tenants of real property acquired to implement the proposed project are protected under the Uniform Act, which provides for fair uniform and equitable treatment of persons displaced from their homes, businesses, or farms by federal and federally assisted programs. The Uniform Act recognizes that displacement of businesses often results in their closure, and aims to minimize the adverse impact of displacement to maintain the economic and social well-being of communities. The Uniform Act is designed to ensure that individuals do not suffer disproportionate injuries as a result of programs and projects designed for the benefit of the public as a whole, and to minimize the hardship of displacement on such persons. In New Jersey, project-required displacements and relocation must also adhere to the New Jersey Redevelopment and Housing Law NJSA 40A:12A.

METHODOLOGY

The first step in the analysis of the land use and social conditions was the collection of the required information about the project study area. As discussed in Chapter 2, "Project Purpose and Need," the study area is bounded by Kearny Junction Interlocking to the west and Secaucus Transfer Station to the east, roughly 2,000 feet north and 2,000 feet south of the existing Northeast Corridor (see Figure 5.1-1). The size of the study area was based on a consideration of potential project impacts during construction and operation. The boundaries of the study area consider existing physical and visual boundaries, such as the Passaic River and Penhorn Creek, which separate municipalities.

LAND USE, ZONING, PUBLIC POLICY, OPEN SPACE, AND PARKLAND

The analysis of land use, zoning, public policy, open space, and parkland was performed through the following six steps:

1. Identification of land uses and land use patterns, community facilities, parklands, and open space.
2. Review of local and regional government regulations (including zoning), policies, and plans influencing growth, development, and preservation in the study area;
3. Identification of development trends and planned transportation and development projects;

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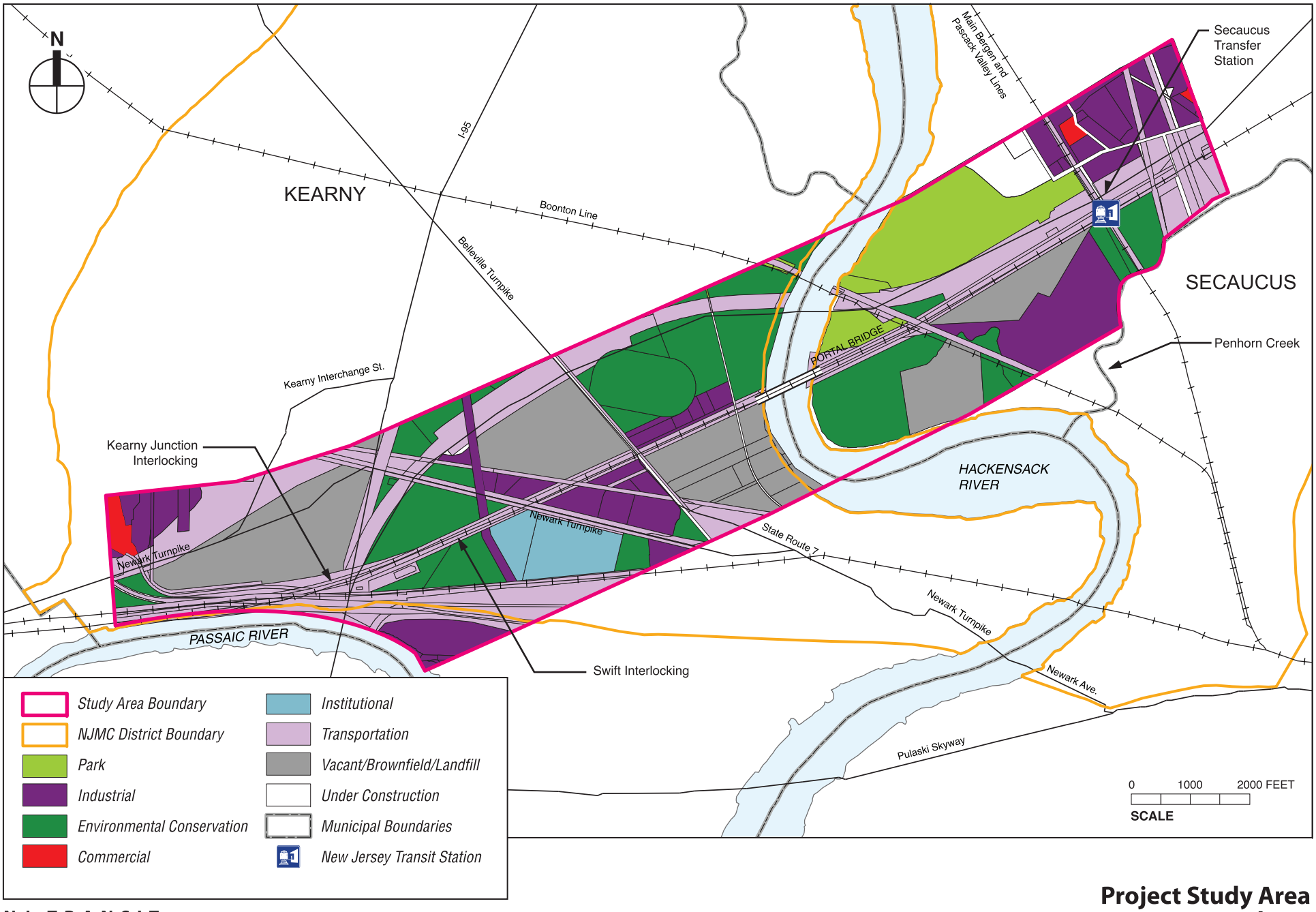

NJ TRANSIT
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ENHANCEMENT PROJECT

Project Study Area
Land Use
Figure 5.1-1

4. Projection of future conditions with the proposed project and the potential impacts related to land use, community facilities, and open space.
5. Determination of the proposed project's consistency with the various land use and zoning plans and policies and future developments;
6. Where impacts are identified, description of mitigation measures to eliminate or reduce the magnitude and/or severity of the impacts.

SOCIAL CONDITIONS

The analysis of social conditions was performed by identifying the existing and projected population within the study area. The purpose of this analysis was to consider the potential for the project alternatives to bifurcate neighborhoods, adversely affect community cohesiveness and neighborhood character (e.g., through increased noise and traffic), and alter pedestrian circulation and accessibility to local businesses.

PROPERTY ACQUISITIONS AND DISPLACEMENTS

The property acquisitions analysis considers the direct impacts of the project alternatives' use of property beyond the existing rail right-of-way. The analysis was conducted through the following steps:

1. Identification of properties, property uses, and property owners that may be directly affected by the project alternatives. The total extent of private and public property acquisitions (or easements) for the Portal Bridge Capacity Enhancement Project was established for each alternative. Tax maps and municipal tax records were reviewed. In the case of tax-exempt property owned by public agencies or utility corporations, properties details were requested directly from the agency. The existing uses of properties potentially to be acquired under each alternative were field-verified.
2. Description of the federal and state laws regarding purchases and relocation as part of the full disclosure of the process of property acquisition.
3. Analysis of the direct effects of displacement and relocation. The availability of suitable sites for relocation was evaluated through research of vacancy rates in nearby comparable neighborhoods, current trends in local residential and commercial property markets, and interviews with local real estate professionals.
4. Analysis of the indirect effects of displacement and relocation. For a direct displacement to create a significant adverse effect on the local community, a displaced resident or businesses must represent a defining element of the character of the area. This evaluation considered land use adjacent to potentially acquired properties to determine the potential for the residential and commercial property acquisitions to disrupt the character and unity of the area.

C. EXISTING CONDITIONS

LAND USE

The study area is dominated by wetlands and environmental conservation areas, vacant land, transportation and industrial uses; there are no residential areas or community facilities in the

study area (see Figure 5.1-1). Various intermodal transportation corridors—including rail rights-of-way and former rail rights-of-way, local roads, and the limited access I-95 (New Jersey Turnpike)—intersect the study area, creating large parcels of land between them (geographic features are shown in Figure 3-1). A utility line right-of-way and the Hackensack River further divide the study area. Most roads in the study area consist of limited access highways; the small number of local roads and the large areas of wetlands and former landfills limit the amount of developable properties.

Amtrak's existing Northeast Corridor passenger rail line and the associated right-of-way form the spine of the study area. The study area can be described generally in three sections—the western portion near Swift Interlocking, the center portion (including the Hackensack River and the existing Portal Bridge), and the eastern portion near Secaucus Transfer Station. For a more detailed analysis of the properties to be affected by the proposed project alternatives, see Section E, "Probable Impacts of the Build Alternatives."

WESTERN PORTION (SWIFT INTERLOCKING AREA)

The western portion of the study area extends eastward along the Northeast Corridor from I-280 to Belleville Turnpike, and its southwestern boundary is formed by the Passaic River. This portion of the study area comprises heavy industrial uses, rail tracks, and wetlands and is most diverse in terms of land uses due to the relative accessibility to local roadways. A dominant feature in this portion of the study area is the elevated New Jersey Turnpike (I-95), which runs north-south through the study area. The eastern spur of the New Jersey Turnpike branches off from the main section within this portion of the study area.

Newark Turnpike, I-280, and Belleville Turnpike divide the study area from north to south, and all are located in this section of the study area. The majority of active land uses in this portion of the study area are located adjacent to the Newark and Belleville Turnpikes. On the western edge of the study area, along the Newark Turnpike, there are heavy industrial uses as well as the parking lot for a big-box retail store. The middle of this portion of the study area, between the Newark and Belleville Turnpikes, is occupied by multiple heavy industrial businesses on large parcels, as well as a U.S. Postal Service distribution and maintenance facility and a utility right-of-way that runs north-south between I-95 and Belleville Turnpike. Two former landfills are located to the north of the Northeast Corridor rail right-of-way—the 161-acre 1-D Landfill and the 54-acre 1-A Landfill—both of which were closed in the 1980s and are under the jurisdiction of NJMC.

There are two major rail junctions in this part of the study area, Kearny Junction Interlocking and Swift Interlocking, located to the west and east of I-95, respectively. Kearny Junction Interlocking forms the west end of a pair of parallel connecting tracks that link NJ TRANSIT's Morristown Line (which carries trains to and from Hoboken Terminal) with the Northeast Corridor (which carries trains to and from New York Pennsylvania Station [PSNY]). Kearny Junction Interlocking and Swift Interlocking consist of tracks and switches that connect these two routes. In addition to the Amtrak and NJ TRANSIT rail lines, a segment of the Port Authority Trans Hudson (PATH) rail line runs east-west near Kearny Junction Interlocking. South of the U.S. Postal Service facility are a NJ TRANSIT maintenance facility and the Kearny Intermodal Yard, a 120-acre yard owned by freight rail operator CSX.

The remainder of this portion of the study area consists primarily of wetlands, open water, and other vacant, ecologically sensitive land uses. Cedar Creek Marsh, located between the Northeast Corridor right-of-way and Kearny Intermodal Yard, is a protected wetland area.

CENTER PORTION (HACKENSACK RIVER AREA)

The center portion of the study area is located between Belleville Turnpike and the Boonton Line. A major feature in this portion of the study area is the Hackensack River, which is located in the middle of this section of the study area. Belleville Turnpike is the only local road in this portion of the study area and provides access to properties on the western shore of the Hackensack River. Three brownfield sites and an industrial business, a linen cleaning and supply company, are located between Belleville Turnpike and the river. The brownfield sites, which are on the south side of the Northeast Corridor right-of-way, are known as the Standard Chlorine, Diamond Shamrock, and Koppers Coke properties. The Standard Chlorine site was recently added to the Superfund program's National Priorities List (discussed further in Chapter 5.7, "Contaminated Materials.") The industrial linens supply business is located to the immediate north of the Northeast Corridor and is operated by Royale Linens, the property is owned by the Jana Corportation. The remainder of the study area on the west side of the Hackensack River consists of wetlands, open water, and other ecologically sensitive areas. In addition, the eastern spur of the New Jersey Turnpike passes east-west along the northern edge of this section of the study area.

On the east side of the Hackensack River there is a predominance of wetlands, open space, and vacant land. As discussed in more detail below, these natural areas occupy the eastern shore of the Hackensack River and include the Riverbend Wetland Preserve located south of the Northeast Corridor and a 14.9-acre parcel of wetlands between the New Jersey Turnpike and Northeast Corridor right-of-way. This parcel was recently acquired by Hudson County and the NY/NJ Baykeeper to facilitate expansion of Laurel Hill Park (which is to the north, as described below). South of the Northeast Corridor, a portion of the former Malanka Landfill occupies a 36-acre parcel west of the Boonton Line adjacent to the Riverbend Wetland Preserve.

EASTERN PORTION (SECAUCUS TRANSFER STATION AREA)

The eastern portion of the study area is located between the Boonton Line and the area around County Road. The southeastern corner of this section of the study area is bounded by Penhorn Creek, which separates Secaucus and Jersey City. Midway between the Boonton Line and County Road is NJ TRANSIT's Secaucus Transfer Station, a major rail station that allows commuters from trains bound for Hoboken and PSNY to transfer between trains. A recently completed infrastructure project on the New Jersey Turnpike (Interchange 15X) adjacent to Secaucus Transfer Station allows drivers to access the station as well as roads and businesses in the northeastern portion of the study area.

Much like the western portion of the study area, this section is more diverse in terms of land use than the large central portion of the study area, because of its increased transportation accessibility. On the north side of the Northeast Corridor right-of-way, the eastern spur of the New Jersey Turnpike also runs east-west through the study area. North of the New Jersey Turnpike, the 46-acre Laurel Hill Park occupies the eastern shoreline of the Hackensack River. South of the New Jersey Turnpike and the Northeast Corridor right-of-way, another portion of the former Malanka Landfill occupies a 30-acre parcel extending to the Secaucus Transfer Station. South of the former landfill, between the Boonton Line and the Main/Bergen County and Pascack Valley Lines, a regional utility provider (Public Service Enterprise Group [PSEG]) maintains an 80-acre industrial facility. East of Secaucus Transfer Station and north of the Northeast Corridor, the study area has a mix of industrial and commercial uses. These uses are the southern tip of a large industrial neighborhood in the Town of Secaucus. South of the

Northeast Corridor, a portion of the Croxton Yard Intermodal Facility also falls within the study area. This railyard is used by Norfolk Southern for freight rail operations and storage. The remainder of the eastern portion of the study area consists of vacant land that is either wetlands or other ecologically sensitive areas.

ZONING AND PUBLIC POLICY

As shown in Figure 5.1-1, the Portal Bridge and the portion of the Northeast Corridor between Kearny Junction Interlocking and Secaucus Transfer Station are located within the boundaries of the Meadowlands District. Most of the study area is also located within this district, with the exception of a triangular area at the southern tip of the study area, south of the Kearny Intermodal Yard. As described below, zoning, and public policy within the Meadowlands District are under the jurisdiction of NJMC; in the small portion of the study area outside the Meadowlands, they are under the jurisdiction of the Town of Kearny and Hudson County. Although NJ TRANSIT and Amtrak are not subject to local regulations, including zoning, the zoning and public policy apply to the rest of the study area.

MEADOWLANDS DISTRICT ZONING

The Meadowlands District was established in 1968 by the State of New Jersey's Hackensack Meadowlands Reclamation and Development Act. The district covers more than 30 square miles or some 20,000 acres, including portions of 14 municipalities in Hudson and Bergen Counties in northeastern New Jersey. For this area, NJMC operates through its legislative mandate as both regional planning agency and as planning board, and is responsible for land use planning, implementation of zoning controls, site plan review, and protection of the environment.

NJMC has established zoning for the Meadowlands District. Within the study area, zoning is consistent with the existing land uses, described above. The rail and highway corridors are not zoned. The rest of the study area is zoned primarily for intermodal and environmental conservation uses (see Figure 5.1-2). The western and eastern portions of the study area are zoned for redevelopment. In addition, the Hudson County Park at Laurel Hill is zoned for parks and recreation. Table 5.1-2 lists the uses allowed in each of the zones in the study area.

ZONING OUTSIDE THE MEADOWLANDS DISTRICT

The small portion of the study area that is outside of the Meadowlands District is within the Town of Kearny and is part of a larger area that is zoned South Kearny Industrial North. As shown in Table 5.1-1, this zoning district permits a range of heavy industrial and transportation-related uses.

MEADOWLANDS DISTRICT PUBLIC POLICY

In addition to zoning, NJMC has developed a master plan for the Meadowlands District, the *NJMC Master Plan*, published in 2004. This plan includes land use plans for the entire district, intended to guide any future redevelopment. It also includes a transportation plan, separately entitled, *Meadowlands Mobility 2030*.

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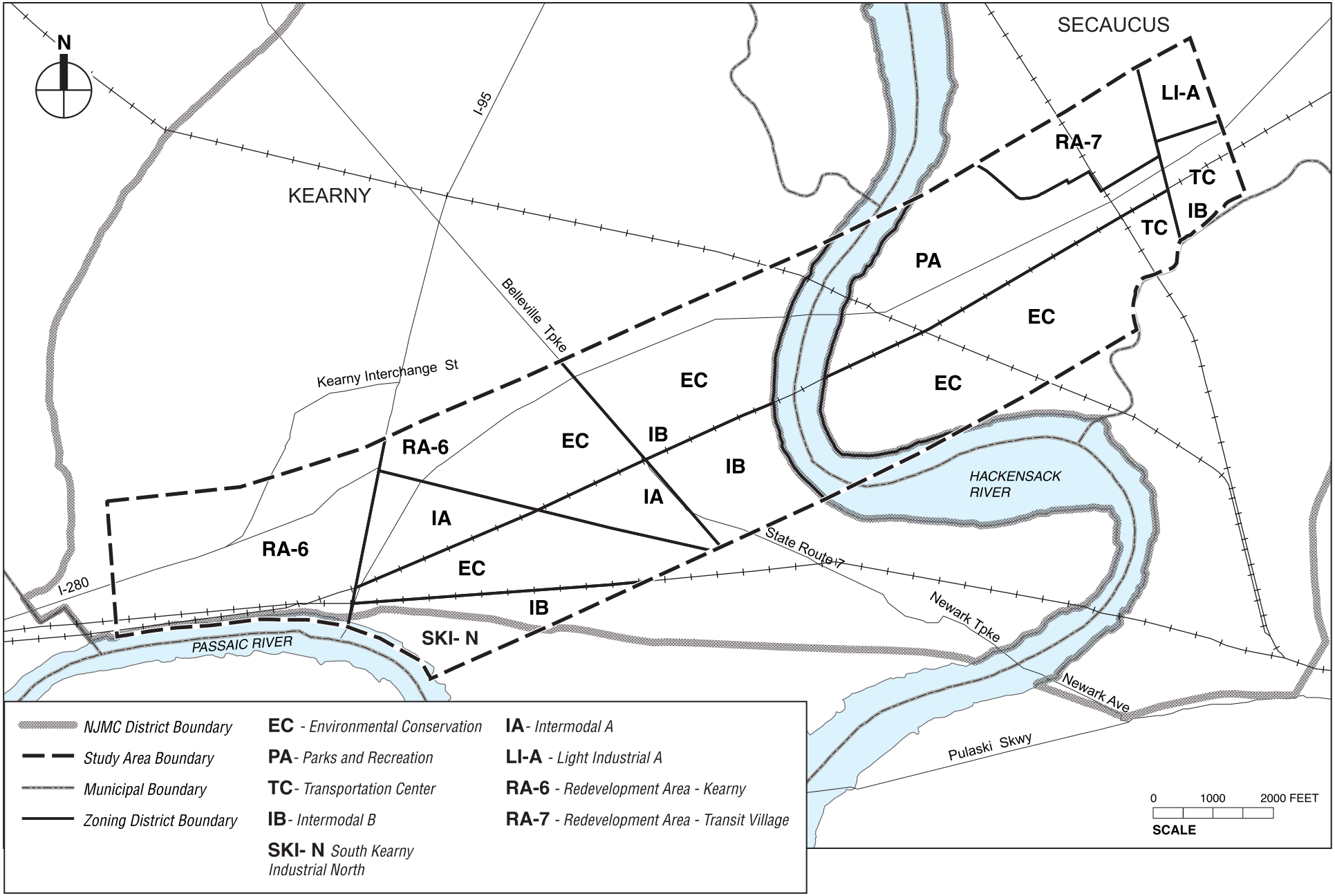

NJMC District Boundary
Study Area Boundary
Municipal Boundary
Zoning District Boundary

EC - *Environmental Conservation*
PA- *Parks and Recreation*
TC- *Transportation Center*
IB- *Intermodal B*
SKI- N *South Kearny Industrial North*

IA- *Intermodal A*
LI-A - *Light Industrial A*
RA-6 - *Redevelopment Area - Kearny*
RA-7 - *Redevelopment Area - Transit Village*

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Project Study Area Zoning Map

Figure 5.1-2

Table 5.1-1
Zoning within the Study Area

Zone Category	Authority	Permitted Uses
Environmental Conservation (EC)	NJMC	Areas designated for open space and habitation protection and enhancement. Includes wetland restoration and/or mitigation and potential wildlife management areas.
Parks and Recreation (PA)	NJMC	Parks and recreation facilities, wildlife habitat creation, cemeteries.
Transportation Center (TC)	NJMC	Passenger rail terminals, offices, restaurants, institutional uses and parks or recreational facilities.
Intermodal A (IA)	NJMC	Intermodal facilities, light industry, parks or recreational facilities, passenger rail, warehouse and distribution, wholesale establishments.
Intermodal B (IB)	NJMC	Intermodal facilities, warehouse and distribution facilities, heavy industry, truck terminals and railroad terminals and yards.
Light Industrial A (LI-A)	NJMC	Warehouse and distribution facilities, light industry, wholesale establishments, institutional uses, essential public services and parks or recreational facilities.
Redevelopment Area – Kearny (RA-6)	NJMC	New retail center in the area south of Harrison Avenue, located in the southeastern portion of the redevelopment area.
Redevelopment Area – Transit Village (RA-7)	NJMC	Mixed-use residential, commercial and office development adjacent to the Secaucus Transfer Station.
South Kearny Industrial North (SKI-N)	Town of Kearny	Range of manufacturing and industrial uses, including motor freight and freight forwarding facilities, intermodal facilities, truck terminals and warehouse and distribution facilities, railroad terminals and yards, resource recovery systems.

Note: See Figure 5.1-2, Existing Zoning Map
Sources: NJMC Zoning Ordinance, 2004; Revised General Ordinances of the Town of Kearny, 1997.

The Master Plan is intended to update the original 1970 planning document for the Meadowlands District. It sets forth NJMC's vision for the Meadowlands District and goals to further that vision. Overall, the vision statement focuses on protecting, preserving, and enhancing wetlands; balancing new development and planned redevelopment on upland sites; creating a well-integrated multi-modal transportation network; and retaining and facilitating the growth of commercial, industrial, and financial businesses and jobs. Redevelopment of underutilized "brownfield" sites is one of the goals, and this redevelopment and any new development should take into consideration the capacity of the transportation system, the availability of public services, and the impact on the environment. To that end, the Master Plan focuses on "smart growth," and designates certain areas of the district as "Smart Growth Planning Areas." In the study area for the Portal Bridge Capacity Enhancement Project, the industrial parcels and the area near the Secaucus Transfer Station are designated as Smart Growth Planning Areas. The Master Plan recognizes that its goals are at times in conflict, in that

protection and enhancement of wetlands and open areas may not always be consistent with the future development and redevelopment of distribution/warehousing facilities and transportation improvements in the Meadowlands District.[1]

The Master Plan also outlines a Land Use Plan for the entire Meadowlands District. The Land Use Plan is in turn reflected in the zoning established for the district, which is described earlier in this chapter. The Land Use Plan divides the Meadowlands District into 20 different planning areas, with separate goals for each. No land use planning area is mapped on the highway or rail transportation corridors in the study area. In the rest of the study area, four of these areas are present:

- Hackensack River Preserve: mapped throughout the central part of the study area, including most of the study area east of the Belleville Turnpike (but not including the former Diamond Shamrock and Standard Chlorine sites just east of the Belleville Turnpike on the west side of the Hackensack River). In the Preserve area, the Land Use Plan permits uses that are consistent with preservation of open space and habitat protection and enhancement. Under the Land Use Plan, NJMC seeks to preserve and enhance the existing 8,400 acres of wetlands in the district with the intent of full public ownership of these lands.
- Logistics/Intermodal/Industrial: mapped on most of the rest of the study area, including most of the area west of the Belleville Turnpike and also the former Diamond Shamrock and Standard Chlorine sites. This land use designation indicates areas traditionally associated with heavy industry, and is intended to allow uses that further this economic activity.
- Secaucus Transit Center: mapped around the Secaucus Transit Center. The Land Use Plan anticipates transit-oriented mixed-use residential, office, and retail development focused around this major transportation hub. Within the mapped Secaucus Transit Center designation, the Secaucus Greenway (discussed later in this chapter) is to be a focal point for open space.
- Employment Center: mapped south of the Northeast Corridor tracks just south of Secaucus Transit Center. This land use designation permits a mix of office, warehouse, distribution, and industrial land uses.

Two portions of the study area within the Meadowlands District are designated by NJMC as redevelopment areas: one at the western end of the study area in Kearny and the other at the eastern end of the study area at the Secaucus Transfer Station. NJMC's zoning also indicates where these redevelopment areas are located (see Figure 5.1-2). For an area to be designated for redevelopment, it must first be deemed "in need of redevelopment," after which NJMC authorizes a redevelopment plan to be prepared.

The Master Plan also incorporates a separate transportation plan for the District. This document, *Meadowlands Mobility 2030*, was adopted in May 2004. This document is a technical study intended to support the Master Plan by providing a detailed assessment of transportation needs and priorities within the District. The report combines the plans established by each of the transportation agencies operating in the District. In the study area, it notes several priority projects: the recently completed Secaucus Transfer Station, replacement of Portal Bridge, provision of additional NJ TRANSIT service to PSNY, and other related service and rail infrastructure improvements.

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[1] **Source:** *NJMC Master Plan*, 2004, page 11-1.

HACKENSACK MEADOWLANDS TRANSPORTATION PLANNING DISTRICT

In addition to the Meadowlands District, New Jersey legislation (Hackensack Meadowlands Transportation Planning Act, effective June 24, 2005) also established a Transportation Planning District within the Meadowlands District. As required by law, a comprehensive District-wide Transportation Plan must be adopted that designates transportation projects and associated funding needed to sustain future economic growth. In June 2007, the Draft 2007 Meadowlands District Transportation Plan was published for public review. The plan identifies transportation needs and recommends future improvements to meet those needs. The comment period on the draft plan remained open through September 2007. Following completion of the comment period, a final plan will be prepared and adopted. The draft plan identifies future plans in the district, including committed plans, other recommended plans, and other future transit improvements that would benefit the district. The Portal Bridge Capacity Enhancement Project is not specifically mentioned in the document, but other NJ TRANSIT initiatives to increase capacity are.

PUBLIC POLICY OUTSIDE THE MEADOWLANDS DISTRICT

Hudson County adopted a Master Plan in 2002 covering the entire county. For areas within the Meadowlands District, the Master Plan is coordinated with the NJMC's Master Plan, described above. The Hudson County Master Plan describes the other public policies and plans in effect in the different municipalities in the county. It outlines the overall goals and objectives for the county, including those set forth by other planning documents for areas within the county. Goals include the revitalization of commercial and industrial centers within the county, improvements to the transportation network, and the development of the waterfront along the Hudson, Hackensack, and Passaic Rivers. The County is seeking to establish industrial areas through improvements to infrastructure and accessibility, create commercial centers accessible via mass transit, and encourage the development of waterfront walkways and the construction of marinas/ports where suitable along the waterfront. Strategies set forth in the Land Use Plan within the Master Plan include reusing of abandoned or unproductive properties, improving access and infrastructure to special development areas and redevelopment areas, and providing incentives for clean up of brownfield sites.

Subsequent to the Hudson County Master Plan, the *Hudson County Park Master Plan: Plan for Improvement 2007-2013* was published in April 2007. The overall goals and objectives of the Hudson County Park Master Plan are to double the amount of open space in Hudson County, plant 10,000 new trees along county roads and in county parks, coordinate a waterfront walkway along the county's waterfronts, and preserve extant scenic vistas, parkland, and the many environmentally sensitive areas and wetlands throughout the county.

Most of South Kearny—including portions that are located in the Meadowlands District as well as areas that are not—is located within a designated Urban Enterprise Zone established in 1986. Urban Enterprise Zones are established in accordance with New Jersey State law in areas of economic distress and are intended to stimulate economic activity through the use of tax advantages and other financial incentives.

PARKLAND AND OPEN SPACE

NJMC WETLAND AND PRESERVATION AREAS

There are more than 8,400 acres of marshland located within the boundaries of the NJMC; many of these areas are important ecosystems and natural habitats. Within the study area, there are several wetland preserve areas. Kearny Brackish Marsh is a roughly 155-acre wetland complex, which includes Cayuga Dike and is located to the north of the Northeast Corridor between the Belleville Turnpike and the Hackensack River. Cedar Creek Marsh is 20 acres in size and situated on both sides of the Northeast Corridor between I-95 and the Public Service Electric and Gas Company (PSE&G) power lines in Kearny. The Riverbend Wetland Preserve is a 58-acre tidal marsh that NJMC purchased for preservation in 1998 as part of a U.S. Army Corps of Engineers (ACOE) approved wetlands mitigation plan for the Teterboro Airport. The site is also used for study by Rutgers University. As discussed below and in Chapter 5.6, "Ecology," NJMC has recently evaluated the conditions of the preserve and prepared enhancement plans.

HUDSON COUNTY PARK AT LAUREL HILL

Hudson County Park at Laurel Hill (also referred to as "Laurel Hill Park") is a 46-acre county park located within a larger 104-acre County-owned parcel on the east bank of the Hackensack River, just north of the eastern spur of the New Jersey Turnpike. The park was completed in 1997, and provides both passive and active recreational uses. The Hackensack Riverkeeper (a nonprofit advocacy group with a mission is to protect and defend the ecosystem of the Hackensack River) maintains a paddling and boating center within the park that provides seasonal weekend canoe and kayak rentals. Also located in the park is Hudson County's only free public boat launch. Other notable features of the park include a 12-acre remnant rock outcropping known as "Laurel Hill," a riverfront promenade with scenic overlooks, picnic areas, nature trails, and soccer and softball fields. The riverfront promenade, which extends along the Hackensack River for the length of the park, is part of a future planned Hackensack River Walk (see below).

Hudson County and the NY/NJ Baykeeper recently purchased a 14.9-acre parcel of wetlands located south of the existing Laurel Hill Park from the Jersey City Water Authority. This parcel is located between the Northeast Corridor right-of-way and the New Jersey Turnpike overpass and associated right-of-way; the New Jersey Turnpike separates the 14.9-acre parcel from the existing Laurel Hill Park. Future plans for the new parcel are discussed below in Section D, "No Action Alternative."

HACKENSACK RIVER WALK

The Hackensack River Walk (also referred to as the "Secaucus Greenway" or the "Hackensack River Greenway") is a planned eight-mile waterfront park that will extend from Secaucus to the north through Bayonne to the south. Portions of the Hackensack River Walk have been constructed and are in use, including the waterfront promenade in Laurel Hill Park and two other segments north of the study area. The planned route of the complete Hackensack River Walk is discussed below in Section D, "No Action Alternative."

ECONOMIC CONDITIONS

There are approximately 30 businesses in the study area. Most of the businesses are industrial or transportation-related and are typically located in single-story buildings with large floorplates

and flanked by large paved areas for truck staging and employee parking. Eleven establishments provide wholesale and distribution services, including an OfficeMax warehouse, apparel warehouses for Calvin Klein and Kasper ASL, three food distributors, and a textile exporter. Transportation and warehousing establishments account for another six businesses in the study area. They include the Arrow Pac Container Freight Station, a Peter Pan Trailways maintenance center, and other shipping and trucking services. The remaining businesses in the study area include six manufacturers, two construction firms, one information management business, two retail establishments (including a parking lot for a Wal-Mart store located just outside the northwest corner of the study area), and one restaurant. In addition, there is a large U.S. Postal Service distribution and vehicle maintenance center, the Dominick Daniels Receiving, Processing and Distribution Center, along Newark Turnpike in the center of the study area.

SOCIAL CONDITIONS

Hudson County is the most densely populated county in New Jersey. After the industrial decline of the 1970s, the county has seen new commercial and residential development since the late 1990s, specifically along the Hudson River waterfront in Jersey City and Hoboken. This recent growth in housing combined with significant increase in immigration has led to the end of a 65-year trend of a declining population in the county.[1]

Despite increasing population in Hudson County, few or no residents live in the study area. As discussed above, the majority of the study area is occupied by wetlands, and industrial and transportation uses.

D. NO ACTION ALTERNATIVE

In the No Action Alternative, planned transportation projects as well as several projects unrelated to the Portal Bridge Capacity Enhancement Project will likely be constructed. Section B of Chapter 3, "Project Alternatives," describes several regional transportation projects that are expected to be completed by 2030. In addition, there are several other projects which could be completed by that time that might affect land use and social conditions. This section identifies planned projects that are likely to be completed by 2030, which is the Portal Bridge Capacity Enhancement Project's build year and the year used to identify future baseline conditions. Some of the projects discussed below are speculative; however, they have been included to provide a conservative analysis.

LAND USE, ZONING, AND PUBLIC POLICY

WESTERN PORTION (SWIFT INTERLOCKING AREA)

The far western portion of the study area is part of the Kearny Redevelopment Area, which has a total of 860 acres recently rezoned by NJMC in order to bring new land uses to this part of Kearny. Within the study area, the Kearny Redevelopment Plan calls for a retail center in the area south of Harrison Avenue that may be developed by 2030.

[1] **Source:** *Hudson County Master Plan*, 2004, Executive Summary.

CENTER PORTION (HACKENSACK RIVER AREA)

It is expected that remediation of the Standard Chlorine, Diamond Shamrock, and Koppers Coke sites, located south of the Northeast Corridor tracks between the Belleville Turnpike and the Hackensack River, will be completed by the year 2030. There are currently no specific development plans for these sites; however, NJMC's Land Use Plan identifies these sites as within the area planned for intermodal or industrial uses.

EASTERN PORTION (SECAUCUS TRANSFER STATION AREA)

The northeast corner of the study area, at Secaucus Transfer Station, is planned for development with a transit-oriented, mixed-use development, the Secaucus Transit Village. The Secaucus Transit Village is already in the first construction phase of a phased development plan that, upon completion, is to include 1,850 residential units, 750,000 square feet of retail and office space, a 500-room hotel, a linear park, and restricted parking for residents of the village. The first phase of development of the Secaucus Transit Village is already under construction in the parcel of land immediately east of Laurel Hill Park (see Figure 5.1-1). The rest of the area slated for this planned development is currently occupied by industrial uses. For the purposes of this analysis, it is assumed the Secaucus Transit Village will be completed by the proposed project's 2030 analysis year.

ZONING AND PUBLIC POLICY

It is not anticipated that NJMC or the Town of Kearny will substantially alter the zoning or public policy in the study area.

PARKLAND AND OPEN SPACE

NJMC PRESERVE AREA

NJMC seeks to preserve and enhance the existing 8,400-acres of wetlands in the district with the intent of providing full public ownership. To fulfill this objective, NJMC will maintain all existing wetlands currently under its jurisdiction, and seek to acquire additional wetlands from the New Jersey Department of Environmental Protection Bureau of Tidelands and the State of New Jersey. These efforts will be ongoing and some may be completed by the 2030 analysis year.

RIVERBEND WETLAND PRESERVE

NJMC has plans for wetland enhancement at the Riverbend Wetland Preserve within the study area, including *Phragmites* (common reed) control, which would enhance the native salt marsh community. The planned enhancement efforts are also expected to increase the wetland's suitability for certain species habitat, improve fishing conditions, and improve mosquito control. The completion year for this enhancement is unclear; however, it may be completed by the 2030 analysis year.

HUDSON COUNTY PARK AT LAUREL HILL

According to the 2007 Hudson County Park Master Plan, Hudson County intends to improve the existing Laurel Hill Park property north of the New Jersey Turnpike by constructing two new soccer fields, two new basketball courts, a synthetic turf sports facility, and a cricket facility. In

addition, as discussed above, Hudson County and the NY/NJ Baykeeper recently acquired a 14.9-acre parcel south of the New Jersey Turnpike for expansion of the park. NJMC, in partnership with Hudson County and the NY/NJ Baykeeper, has plans for wetland restoration in this parcel and in the existing park. The conceptual plans include restoration of up to 2 acres of shoreline in the existing park to encourage fish and recreational catch-and-release fishing. In the expansion parcel, plans include grading of the 14.9 acres of wetland to support marsh grass growth and wildlife, and a new boardwalk and fishing pier along the shoreline. In addition, as discussed below, the waterfront walkway in Laurel Hill Park (part of the Hackensack River Walk, discussed below) is planned to be extended beneath the New Jersey Turnpike into this new expansion parcel. There is no planned completion date for the Laurel Hill Park improvements and expansion.

HACKENSACK RIVER WALK

The Hackensack River Walk is a planned eight-mile waterfront park that will extend from Secaucus to the north through Bayonne to the south. Part of the goal of the Hackensack River Walk is to connect three existing public parks: Laurel Hill Park in Secaucus, Lincoln Park in Jersey City, and Bayonne Park in Bayonne.

It is expected that additional portions of the Hackensack River Walk will be completed by the 2030 analysis year. Although there is not a completion year for the entire project, it is estimated that the majority of the walkway will be completed within the next 25 years. Within the study area, the planned route of the Hackensack River Walk includes a segment parallel to the Boonton Line from the Hackensack River through the expansion parcel at Laurel Hill Park and continuing beneath the Northeast Corridor right-of-way and southward through the PSEG property and toward Lincoln Park in Jersey City. Another segment, leading from Laurel Hill Park to Secaucus Transfer Station, is also planned.

EAST COAST GREENWAY

The East Coast Greenway is a planned 3,000-mile long continuous cyclist and pedestrian trail that would stretch from Maine to Florida and connect all the major cities along the East Coast. The greenway is being planned and promoted by the East Coast Greenway Alliance, a national advocacy organization with individual state chapters. There are several potential on- and off-road routes for this greenway currently proposed in and near the study area. The *New Jersey Transportation Improvement Program (TIP) for Fiscal Years 2007-2010* lists one potential route through the study area, which would provide sidewalks and designated bike lanes on both sides of Belleville Turnpike through the study area. An alternative, off-road route is the same as the extension of the Hackensack River Walk described above. This route would cross the Hackensack River via the Boonton Line and continue south beneath the Northeast Corridor right-of-way and beyond. Overall, the routing and timeframe for potential portions of the East Coast Greenway in the study area are unclear, but this may occur by the Portal Bridge Capacity Enhancement Project's 2030 analysis year.

ECONOMIC CONDITIONS

In the No Action Alternative, economic conditions in the study area will remain similar to existing conditions, except that the planned redevelopments at the western and eastern ends of the study areas—at South Kearny and at Secaucus Transit Village—will increase economic activity in those locations.

SOCIAL CONDITIONS

There are no changes in population expected to occur in the portion of the study area located in the Town of Kearny by the year 2030, as there are no plans for residential development in the area. In the eastern end of the study area, the new Secaucus Transit Village will bring residents to the study area. As described earlier, the planned village will create 1,850 new residential units, both market-rate and affordable.

E. PROBABLE IMPACTS OF THE BUILD ALTERNATIVES

As described in Chapter 3, "Project Alternatives," the Portal Bridge Capacity Enhancement Project considers four feasible build alternatives, Alternative FE, FS, DE, and DS (DS being identified as the preferred alternative) as potential planned improvements to the existing transportation network. As described in Chapter 2, "Project Purpose and Need," the proposed project is intended to relieve the bottleneck that currently forms along the Northeast Corridor between Swift Interlocking and the Secaucus Transfer Station, as trains on multiple east-west tracks are forced to wait to cross the Hackensack River as they merge onto the existing two-track Portal Bridge. All four build alternatives would construct a new bridge with multiple tracks to ease the train congestion along the Northeast Corridor between Swift Interlocking and Secaucus Transfer Station and provide more reliable regional train service to the area. In order to maintain operation of the extant swing bridge during construction of the new bridge, all four build alternatives would create a second, parallel bridge outside of Amtrak's right-of-way to provide enough clearance for the continued functioning of the existing bridge. This second bridge and associated other track and infrastructure improvements necessitate that all four build alternatives require the acquisition of all or a portion of several properties located to the north and south of the Northeast Corridor right-of-way.

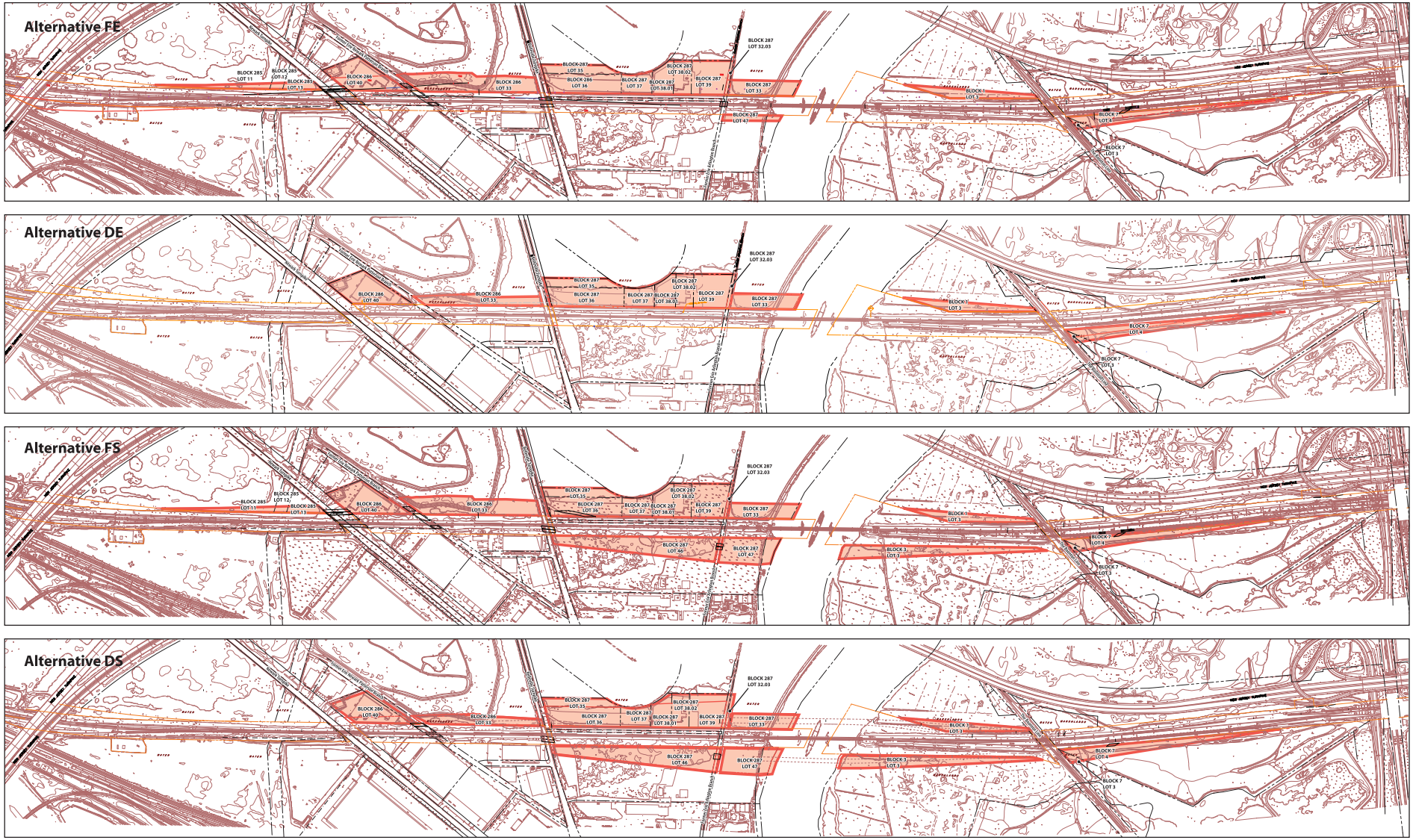
Upon completion of the new bridge, train service will continue to operate as it does today with projected improvements to train capacity and efficiency. The proposed project would increase reliability and would specifically improve the commute of area residents traveling to New York City.

PROPERTY ACQUISITIONS

PROPERTY THAT MAY NEED TO BE ACQUIRED

The properties that may need to be acquired for the construction of any of the build alternatives are listed below in Table 5.1-2 and shown in Figure 5.1-3. The properties in the study area are mainly dominated by industrial uses, former landfills, and park and preserve areas. As shown in the table and figure, most of the acquisition required would constitute only a small portion of each affected property. NJ TRANSIT and Amtrak have begun coordinating with the potentially affected property owners, to ensure that the schedule for land acquisition will be consistent with the overall project schedule.

As shown in the table, Alternative FS would potentially require the greatest amount of property acquisition (45.4 acres), followed by Alternative DS (41 acres), FE (29.2 acres), and DE (24.2 acres).



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Required Property Acquisitions for All Alternatives
Figure 5.1-3

Table 5.1-2
Potential Land Acquisitions by Build Alternative

Property Name / Owner	Block / Lot	Use	Property Size (Acres)	Reason for Acquisition	Acreage to be Acquired by Build Alternative			
					DS	DE	FE	FS
Properties in Town of Kearny (West Side of Hackensack River)								
Town of Kearny (Cedar Creek Marsh)	285 / 11	Wetland preserve	29.7	Wider right-of-way for fly-over	—	—	0.9	0.9
PSE&G Company	285 / 12	Utility right-of-way	1.2	Wider right-of-way for fly-over	—	—	0.2	0.2
Town of Kearny	285 / 13	Wetlands	1.3	Wider right-of-way for fly-over	—	—	0.6	0.6
NJMC	286 / 33	Former landfill	59.9	Wider right-of-way for fly-over or duck-under	3.1	3.1	5.5	5.5
Professional Environ-mental Systems	286 / 40	Industrial	4.0	Wider right-of-way for fly-over	4.0	4.0	4.0	4.0
Hudson County Improvement Authority	287 / 32.03	Former Erie Arlington Branch rail right-of-way	1.2	Wider right-of-way for fly-over or duck-under	0.2	0.2	0.2	0.2
NJMC (Kearny Brackish Marsh/Cayuga Dike)	287 / 33	Wetland preserve	27.0	Approach to new northern bridge	2.5	2.5	2.5	2.5
Jana Corp	287 / 35,36, 37,38A,38, 39	Manufacturing	11.1	Approach to new northern bridge	11.1	11.1	11.1	11.1
Diamond Shamrock, Chemical Land Holdings	287 / 46	Brownfield	20.5	Approach to new southern bridge	8.6	—	—	8.9
Diamond Shamrock, Chemical Land Holdings	287 / 47	Brownfield	5.5	Approach to new southern bridge	3.5	—	0.9	3.5
Properties in Town of Secaucus (East Side of Hackensack River)								
Hudson County/NY/NJ Baykeeper (Laurel Hill Park expansion area)	1 / 3	Undeveloped land planned for wetlands restoration	14.9	Approach to new northern bridge	2.0	2.0	2.0	2.0
NJMC (Riverbend Wetland Preserve)	3 / 3	Wetland preserve	58.1	Approach to new southern bridge	4.7	—	—	4.7
PSEG Power LLC	7 / 3	Industrial	80.3	New bridge over the Boonton Line	0.2	0.2	0.2	0.2
Secaucus Brownfield Redevelopment LLC	7/ 4	Brownfield	29.5	New southern tracks	1.1	1.1	1.1	1.1
				Total Potential Property Acquisition, by Alternative	**41**	**24.2**	**29.2**	**45.4**

Notes: See Figure 5.1-3

DS: Duck-Under Southern Alignment;
DE: Duck-Under Existing Alignment;
FE: Fly-Over Existing Alignment;
FS: Fly-Over Southern Alignment;

Sources: 1. New Jersey Association of County Tax Boards (http://www.njactb.org/), Accessed October 2007
2. New Jersey Meadowlands Commission

FEDERAL UNIFORM RELOCATION ACT

All property owners and tenants on the parcels of land to be acquired for the construction of the selected alternative would be fairly compensated for their property. The rights of owners and tenants of any real property acquired to implement the proposed project are protected under the federal Uniform Relocation Assistance and Real Property Acquisition Policies Act (referred to in this chapter as the Uniform Act), which provides for fair, uniform, and equitable treatment of people displaced from their businesses by federal and federally assisted programs. The Uniform Act recognizes that displacement of businesses often results in their closure, and aims to minimize the adverse impact of displacement in order to maintain the economic and social well-being of communities. Overall, the Uniform Act is designed to ensure that individuals do not suffer disproportionate injuries as a result of projects designed for the benefit of the public as a whole, and to minimize the hardship of displacement on such persons. Amtrak, FRA, and NJ TRANSIT would adhere to these laws with regard to relocation services, moving payments, and other allowable payments related to the displacement and moving costs of any businesses located on the parcels of land that are acquired for the construction of the selected project alternative.

GREEN ACRES PROGRAM

The Green Acres Program is administered by NJDEP and was established to help ensure that there is access to and an adequate supply of public open space and conservation areas of natural resources in the State of New Jersey. The program offers funding to local governmental units and nonprofits to assist in these efforts to conserve public open space and protect existing natural resources and wildlife habitats in the State. The program establishes procedures and standards for the maintenance of properties purchased with Green Acres funding; therefore, the program follows restrictions and compensation requirements that must be adhered to by any nonprofit or local government unit that wishes to use Green Acres funded property for anything other than outdoor recreation and/or conservation purposes.

The Green Acres Program categorizes the disposal or diversion of properties purchased with Green Acres funding in two ways: Major and Minor disposals or diversions of parkland. Since all of the build alternatives would acquire two acres of the expansion area at Laurel Hill Park, this acquisition would constitute a major disposal of a Green Acre property. The program's general procedural requirements for a major disposal of a Green Acre funded property are as follows:

- A pre-application conference should be scheduled between the applicant and Green Acres to discuss the proposed disposal of parkland and the subsequent scoping hearing to allow for public comment on the proposed disposal of parkland and alternatives to the proposed disposal of parkland.
- After the pre-application conference and scoping hearing have been conducted, the applicant shall submit a pre-application for the proposed disposal of parkland which provides specific information on the parkland proposed for disposal including acreage to be disposed, purpose of the project for which the disposal is proposed, intended future use and owner of the parkland, and a description of how the proposed disposal of the parkland would yield a significant public benefit and/or need.
- The pre-application must also include an alternatives analysis that addresses all of the alternatives proposed to fulfill the public benefit and/or need that would require the disposal

of the parkland. This analysis will describe in detail each alternative including environmental impacts, cost, timetable, and required permits, etc.

- Upon reviewing the pre-application, if the pre-application is deemed complete by the NJDEP then the Department will authorize the submission of a final application by the applicant for submission to and approval by the Commissioner and State House Commissioner.
- The final application will discuss the compensation for the disposal of the parkland by potentially offering land replacement, monetary compensation, or a combination of the two. Upon completion of the final application, the applicant shall hold a public hearing and allow for a public hearing period during which written comments may be submitted on the proposed disposal and mitigation of the parkland.
- After the public hearing period, the final application is first submitted to the Commissioner for review. Upon the Commissioner's approval of the application, the application will then be submitted to the State House Commission for review and approval.

In addition to adhering to the Green Acres Program regulations, appropriate mitigation of affected parkland will be developed in conjunction with Hudson County, NY/NJ Baykeeper, NJMC, and other stakeholders. Similarly to other permits and regulatory approvals, the formal diversion process would begin after issuance of FRA's Record of Decision.

LAND USE

Overall, the build alternatives would not result in substantial adverse impacts to land use in the study area. All four build alternatives would continue an existing land use that is dominant through the center of the study area, the rail right-of-way. All four would require some widening of the right-of-way and construction of new bridges and other rail infrastructure, but this would not change the land use or land use patterns in the study area. The rail corridor would continue to be consistent with the heavy industrial, transportation, and intermodal uses common in the study area.

As noted above, all four build alternatives would require acquisition of some land beside the existing Northeast Corridor right-of-way to accommodate the new construction. All four build alternatives would require permanent acquisition in full of an 11.1-acre industrial parcel on the north side of the Northeast Corridor right-of-way for the new northern bridge. Alternatives FE, FS, and DS would also require permanent acquisition in full of a 4-acre industrial parcel on the north side of the right-of-way for connections to the new grade-separated track connection. (Alternative DE may require acquisition of this property for construction staging). All four build alternatives would also require acquisition of portions of other industrial properties and park or preserve areas. The owners of these properties would be fully compensated for the land acquired and the two businesses affected by full acquisitions would be provided relocation assistance to facilitate their reestablishment elsewhere. The land acquired for the build alternatives would be converted to transportation use, which would remain a compatible land use with the surrounding area. Where partial property acquisition is required, this would not adversely affect the ability of remaining existing land uses to continue in their current use. As discussed more below under "Parkland and Open Space," the acquisition of land at the Laurel Hill Park expansion site and Kearny Brackish Marsh/Cayuga Dike would be for piers to support a bridge viaduct above.

Completion of the proposed project under any of the build alternatives would improve transportation service through the study area and better serve the new transit-oriented development planned at Secaucus Transfer Station.

ZONING AND PUBLIC POLICY

As noted earlier, NJ TRANSIT and Amtrak are not subject to local zoning regulations and no zoning designations are mapped on the existing rail right-of-way through the study area. The properties that would be acquired for each of the build alternatives do have zoning, designated by NJMC as part of the Meadowlands District. With the build alternatives, the zoning designations would be removed from the affected portions of the property where the new rail infrastructure would be built. The zoning designations of these areas are consistent with the existing uses; as shown earlier in Figure 5.1-2, these designations include PA (Parks and Recreation), EC (Environmental Conservation), and IA and IB (Intermodal). Other than the property acquisitions, the build alternatives would have no effect on zoning in the study area.

In terms of public policy, the build alternatives would all support one of the key goals of NJMC's Master Plan and other policies for the Meadowlands District: by improving public transportation infrastructure through the study area, the build alternatives would contribute to creation of a well-integrated multi-modal transportation network. All four build alternatives would also support the planned growth of the new transit village at Secaucus Transfer Station, which is an important redevelopment initiative set forth in NJMC's Master Plan. The Portal Bridge Capacity Enhancement Project is specifically endorsed in the NJMC's *Meadowlands Mobility 2030* transportation planning document, and is consistent with the recommended initiatives set forth in the Draft 2007 Meadowlands District Transportation Plan.

At the same time, however, some of the property acquisitions required for the build alternatives would be inconsistent with public policies for the area. Specifically, the conversion of small areas of land designated for park and wetlands uses would be inconsistent with NJMC's policies to support and enhance open space and wetland areas within the Meadowlands District. In addition, the acquisition in full of two privately owned properties occupied by active businesses would be counter to public policies intended to encourage industrial businesses in the study area. As noted in the discussion of existing conditions, NJMC's Master Plan recognizes that its goals are at times in conflict, in that protection and enhancement of wetlands and open areas may not be consistent with the future development and redevelopment of distribution/warehousing facilities and transportation improvements.

PARKLAND AND OPEN SPACE

The build alternatives would require an increase to the size of the existing rail right-of-way through the study area and this would involve acquisition and conversion to transportation use of narrow areas of parkland and wetland preserve along the existing right-of-way. In addition, several of the affected parks and preserved areas would be encumbered by the Green Acres Program, described above. NJ TRANSIT and Amtrak have initiated the process of mitigation of the affected parkland and open space through discussion with all involved parties. Effects on specific parks and preserve areas would be as follows.

- **Cedar Creek Marsh:** Alternatives FE and FS would require acquisition of a narrow strip of Cedar Creek Marsh immediately adjacent to the existing rail right-of-way to accommodate a track connection associated with the flyover. Based on discussions to date, this wetland preserve may be encumbered by the Green Acres Program.

- **Kearny Brackish Marsh/Cayuga Dike:** All four build alternatives would also require acquisition of 2.5 acres to accommodate bridge piers supporting a viaduct above the preserve. Based on discussions to date, this wetland preserve would not be encumbered by the Green Acres Program.
- **Riverbend Wetland Preserve:** As stated above, the Riverbend Wetland Preserve is a 58-acre tidal marsh that NJMC purchased for preservation in 1998 as part of a U.S. Army Corps of Engineers (ACOE) approved wetlands mitigation plan for the Teterboro Airport. The two southern alignment alternatives, Alternatives FS and DS, would require acquisition of a 4.7-acre portion of this wetland preserve to accommodate an overhead viaduct supported on piers. The piers would be located within, but would not occupy all of, the 4.7 acres to be acquired. Based on discussions to date, this preserve would not be encumbered by the Green Acres Program.
- **Hudson County Park at Laurel Hill:** All four build alternatives would require the acquisition of 2.0 acres of the 14.9-acre expansion area at Laurel Hill Park to accommodate the approach to the new northern bridge. As described earlier in the discussion of the No Action Alternative, Hudson County has conceptual plans to enhance the wetlands in this area and to create a new boardwalk and fishing pier along the shoreline. While the Portal Bridge project would need to coordinate its construction with that of the planned park, none of the build alternatives would preclude implementation of Hudson County's plans for the expanded park. This parcel of land was purchased by Hudson County and the NY/NJ Baykeeper under the Green Acres Program, and therefore mitigation of this loss of parkland requires special coordination with NJDEP, described in detail above. NJ TRANSIT and Amtrak have also initiated discussion with Hudson County on potential measures to mitigate the loss of this parkland including possible sites for compensatory parkland and/or open space as well as physical improvements (i.e., access, recreational or infrastructure facilities, etc) at the existing and future Laurel Hill Park. Other possible areas for open space mitigation include opportunities for the project to provide waterfront access to the west side of the Hackensack River. The project sponsors will continue to work with the county and other stakeholders on these various potential mitigation measures as the Portal Bridge Capacity Enhancement Project proceeds into preliminary engineering, allowing for a more refined design of the areas surrounding the bridge structures.
- **Hackensack River Walk:** The Hackensack River Walk's planned route adjacent to the Boonton Line and through the PSEG property (Block 7, Lot 3) would not be adversely affected by the construction of any of the four project alternatives. Each of the four project alternatives would preserve the right-of-way of the Boonton Line, and only a small portion of the PSEG property would be affected by any of the selected alternatives. The other segment planned for the Hackensack River Walk, which extends from Laurel Hill Park to the Secaucus Transfer Station, is north and east of any of the construction impacts caused by each of the four project alternatives, and would therefore not be adversely affected by the proposed project.
- **East Coast Greenway:** The possible routes for the East Coast Greenway through the study area would not be adversely affected by any of the build alternatives. The potential route along the Boonton Line (which is the same as the Hackensack River Walk extension described above) would not be adversely affected by the construction of any of the build alternatives, since all the build alternatives would preserve the right-of-way of the Boonton Line. Similarly, all four of the build alternatives would not adversely affect Belleville Turnpike and therefore would not adversely affect that potential alignment. Finally, all of

the build alternatives also would not interfere with the alternative route of the Greenway along the south side of the Kearny Intermodal Yard.

ECONOMIC CONDITIONS

All alternatives would require the acquisition in full of the Jana Corportation property, for the construction of the northern bridge's approaches. Three of the four alternatives (DS, FS, and FE) would require the acquisition in full of the Professional Environmental Systems property and Professional Environmental Systems business. Information on these businesses is as follows:

- Professional Environmental Systems (Block 286, Lot 40): a construction company that specializes in metal and structural steel fabrication. This firm employs approximately 25 people.
- Royale Linens (Block 287, Lots 35, 36, 37, 38A, 38B, 39): A light manufacturing business that produces and delivers cotton sheet sets. This firm employs approximately 10 people.

The owners of these properties would be fully compensated and the businesses would be provided relocation assistance to facilitate their reestablishment elsewhere.

Acquisition of the properties for the build alternatives would remove these property taxes from the tax roll. The other acquisitions of private property could also affect the property taxes paid at each parcel, although since the amount of acquisition necessary would be small, this effect would not be substantial.

Other than these two businesses, other businesses in the study area would not be adversely affected by the proposed project. Overall, economic conditions in the study area would remain unchanged with the build alternatives. The existing businesses in the study area are oriented around local roadways, rather than the rail corridors, and therefore a change in the rail transportation network near their properties would not affect their business activities.

SOCIAL CONDITIONS

In the future under any of the build alternatives, most of the study area would continue to have no population. The anticipated transit village at Secaucus Transfer Station would be occupied by 2030, bringing a dense population to the eastern end of the study area. The build alternatives would have a positive benefit on the residents at the new transit village, by facilitating a substantial improvement in train service through the Secaucus Transfer Station. ✷

A. INTRODUCTION

This section considers the potential of the proposed project to affect historic resources in the project's area of potential effect (APE). The proposed Portal Bridge Capacity Enhancement Project would affect the section of the Northeast Corridor from Kearny Junction Interlocking to Secaucus Transfer Station. Project alternatives are described in detail in Chapter 3, "Project Alternatives." Potential in-ground disturbances of the project site may result from construction of new bridges over the Hackensack River, and modifications and/or additions to existing railroad tracks and other railroad infrastructure could occur throughout the APE as well.

This FEIS has been prepared in accordance with NEPA, the New Jersey Register of Historic Places Act (NJSA), Section 4(f) of the United States Department of Transportation (DOT) Act, and Section 106 of the National Historic Preservation Act of 1966 (as amended) and associated implementing regulations in 36 C.F.R. 800. Per Subpart A, Section 800.2(a)(3) and 800.2(c)(4) of 36 C.F.R., FRA is authorizing the project sponsors, as an applicant for federal approvals, to prepare information, analyses, and recommendations regarding Section 106 consultation for the referenced project.

METHODOLOGY

To assess the potential effects of the Portal Bridge project on historic resources, APEs for the project alternatives were identified in consultation with the New Jersey State Historic Preservation Office (NJHPO). Once the APEs were determined, an inventory of officially recognized historic resources within the APEs was compiled based on the files of the NJHPO and the New Jersey State Museum (NJSM). This inventory includes properties or districts listed on the National Register of Historic Places (NR) and/or the New Jersey State Register (SR), or determined eligible for such listing; National Historic Landmarks (NHL); and archaeological sites on file at the NJSM. A list of potential architectural resources (i.e., properties that may be eligible for listing on the S/NR) within the architectural APE was also compiled based on field surveys and documentary research. Historic Resource Inventory Forms were prepared for the potential architectural resources, and the NJHPO subsequently concurred as to the resources' S/NR eligibility.

The archaeological APE was assessed for areas that may be sensitive for archaeological resources. Documentary research was conducted to identify areas where prehistoric or historic-period activities may have occurred and resulted in archaeological resources. For each area where prehistoric or historic-period activities may have left archaeological materials, construction activities and other ground disturbances that occurred later on the site were evaluated in order to identify locations where any archaeological resources, if originally present, may have survived.

Once the historic resources in the APEs were identified, the effects of the project on those resources were assessed. Project effects on architectural resources may include both direct (i.e., physical) and indirect (i.e., contextual) impacts. Direct effects could include physical destruction, demolition, damage, or alteration of a historic resource. Indirect effects, such as changes in the appearance of a historic resource or in its setting—including introduction of incompatible visual, audible, or atmospheric elements to a resource's setting, or elimination of publicly accessible views to the resource—are also considered. In addition, Section 106 requires consideration of reasonably foreseeable effects that may occur later in time, be further removed in distance, or be cumulative.

The project alternatives' effects on the potential archaeological resources identified were also assessed. Any archaeological resources present would be affected by construction rather than operation of the project alternatives. For all potential adverse effects identified, mitigation measures were identified.

APE DELINEATION

In consultation with the NJHPO, APEs for historic and archaeological resources have been delineated to take into account the direct, indirect, secondary, and cumulative impacts on these resources types. The APEs are described below and shown on Figure 5.2-1.

APE FOR ARCHAEOLOGICAL RESOURCES

The area of potential effect for archaeological resources includes all areas that could experience ground disturbance under the proposed project alternatives. The archaeological APE, shown in Figure 5.2-1, is bounded by a point roughly 1,800 feet west of the intersection of the Northeast Corridor and the New Jersey Turnpike (I-95) on the west; and by the Secaucus Transfer Station on the east. Other geographical features referenced in this chapter can be found in Figure 3-1. The APE extends 100 feet north and south of the Northeast Corridor between the western boundary and the intersection of the Belleville Turnpike; and 300 feet north and south of the Northeast Corridor between the Belleville Turnpike and the eastern boundary. The APE extends roughly 1,000 feet south of the Northeast Corridor between the Belleville Turnpike and the Hackensack River, to include the Diamond Shamrock and Standard Chlorine Chemical Company properties in Kearny.

APE FOR ARCHITECTURAL RESOURCES

In general, potential effects to architectural resources can include both direct physical effects (e.g., demolition, alteration, or damage from construction on nearby sites) and indirect contextual effects, such as the isolation of a property from its surrounding environment, or the introduction of visual, audible, or atmospheric elements that are out of character with a property or that alter its setting. The APE for architectural resources (shown in Figure 5.2-1) is, therefore, larger to account for any potential impacts that may occur where proposed construction activities could physically alter architectural resources or be close enough to them to potentially cause physical damage or visual or contextual impacts.

The APE for architectural resources for this project is defined as the area surrounding the project site within visual range and to account for potential construction-related impacts. The APE for architectural resources is bounded on the west by a line 2,100 feet west of the intersection of the Northeast Corridor and I-95; and on the east by a point 400 feet east of the Secaucus Transfer Station. These boundaries have been delineated to account for potential visual impacts of

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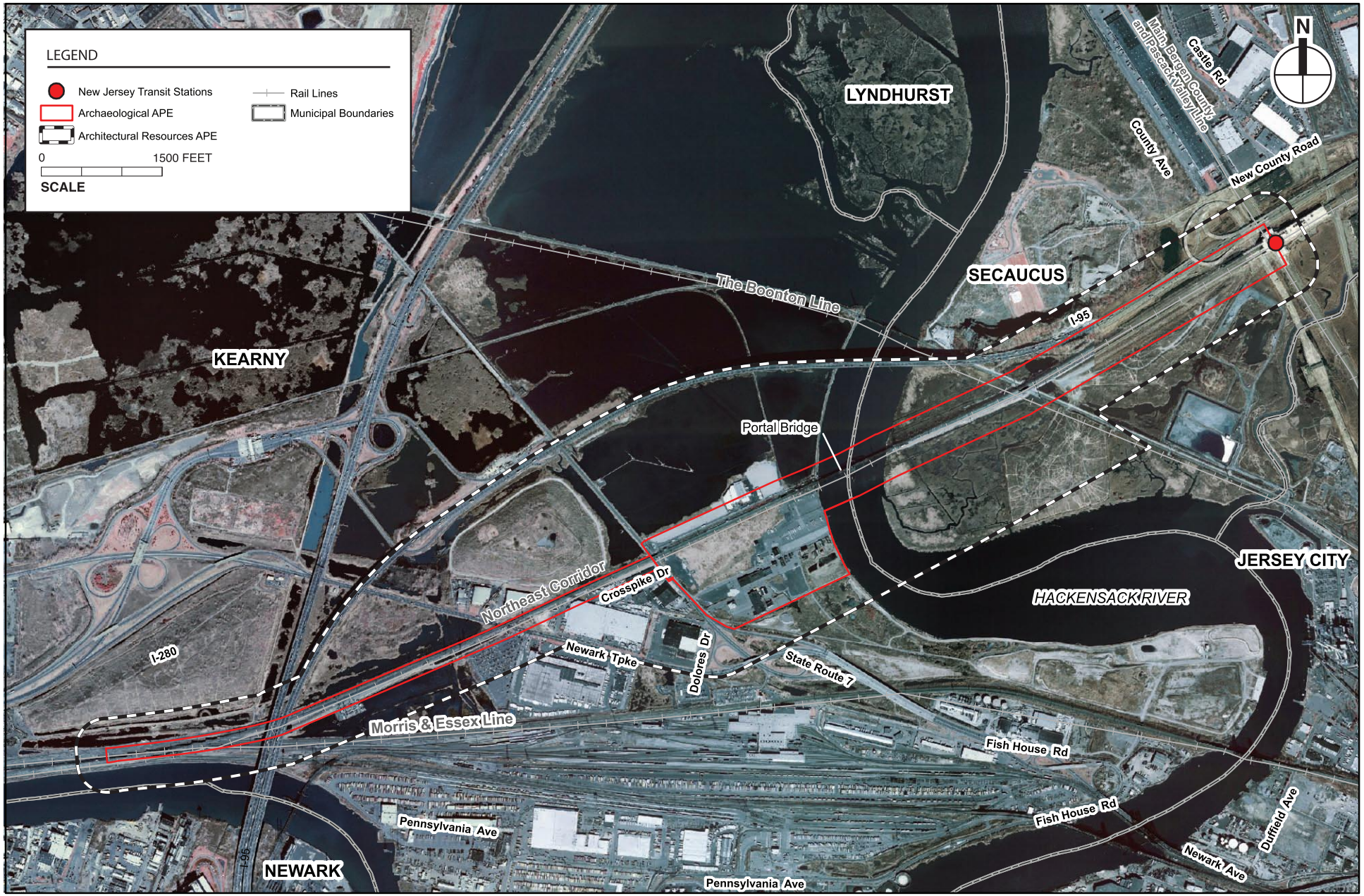

NJ TRANSIT
PORTAL BRIDGE CAPACITY
ENHANCEMENT PROJECT

Architectural and Archaeological APE
Figure 5.2-1

proposed construction activity along the Northeast Corridor. The northern and southern boundaries of the architectural APE extend between 500 and 1,500 feet from the Northeast Corridor. The northern boundary runs in part along the New Jersey Turnpike and its associated bridge over the Hackensack River, which roughly parallels the project site, since the New Jersey Turnpike substantially blocks views between the project site and areas north of the New Jersey Turnpike. The southern boundary has also been drawn to account for views to and from the project site, extending farther in areas of undeveloped and low-lying land where roadways and railroads do not already substantially block views.

B. BACKGROUND HISTORY

The history of the APE's vicinity, provided in detail in Appendix B, is summarized below in order to provide a context for the known and potential historic resources discussed later in this chapter. Human populations (Native Americans) did not inhabit the area that is now New Jersey until approximately 12,500 BP, after the glaciers retreated.

The APE is located in the Meadowlands, the tidal and freshwater wetlands surrounding the Hackensack and Passaic Rivers in northeastern New Jersey. When the first Europeans arrived in the region, a division of the Munsee Indians known as the Hackensack Indians resided in the vicinity (Grumet 1981). With the exploration and settlement of the New Jersey region by Europeans from 1500 to 1700 AD (the Contact Period), the Native American population experienced a period of greatly accelerated change. Atlantic white cedar stands and *Spartina* grasses were characteristic of the Meadowlands at this time, and the area was rich in fish, shellfish, and other game (Marshall 2004). Although several Dutch farmers inhabited the area by the 1630s**,** a successful permanent settlement was not established until 1660, when Bergen Village, near today's Jersey City, was founded (Lenik 1999).

The west side of the Hackensack River, in the vicinity of present-day Kearny, was named New Barbadoes Neck after Captain William Sanford of Barbados acquired the area from the Native Americans in 1668. Early settlement was concentrated along a high ridge between the Hackensack and Passaic rivers (west of the APE), while the marshlands flanking the rivers (including the APE) remained largely undeveloped. Copper was discovered in the Kearny area in 1719, which gave impetus to settlement and construction of new roads.

Transportation was a major component of New Jersey's history since the colonial period, due to its location between New York and Philadelphia. The Newark Turnpike was constructed through the APE in Kearny in the early 1800s, connecting Newark and the Jersey City ferry to Manhattan. Canals, such as the Morris Canal and the Delaware and Raritan Canal superseded roadways as routes for the transport of goods in the 1830s (Lane 1939: 162). However, railroads came to dominate transportation in the region by the mid-19th century.

New Jersey was at the forefront of railroad construction in the United States. In 1832, the New Jersey Railroad Company was incorporated, establishing an initial route between New Brunswick and Jersey City. In 1836, it established a link with the new Morris & Essex Rail Line, which connected Morristown and Newark. In the 1850s, the Montclair and Greenwood Lake Railroad was constructed through the APE between Montclair to Jersey City; the line was taken over by the Erie Railroad in the 1880s (Lane 1939).

On the east side of the Hackensack is Snake Hill, a prominent 150-foot tall igneous rock intrusion in Secaucus (within the APE) that was reportedly held sacred by the Hackensack Indians (Stinson 1915: 369), and was part of the Pinhorne estate until the late 1700s, when

Bergen County located its Poor Farm in the vicinity. In the 1840s, Secaucus became part of Hudson County, which purchased the Poor Farm as the location of multiple county facilities, including an "insane asylum," a penitentiary, an almshouse, an orphanage, several hospitals, a county agricultural farm, and three cemeteries. The history of the cemeteries that were located on the Hudson County property has been detailed in two recent studies (LBG 2005; and TLC 2005) and is summarized in Appendix B.

The vicinity of the APE in Kearny remained largely undeveloped, with the exception of the roads and railroads that traversed it, through most of the 19th century. Much of the Kearny Meadowlands were part of the Samuel Pike estate until around 1900 (Stinson 1915: 370). Several anecdotal accounts in newspapers and local histories suggest that the Meadowlands in both Kearny and Secaucus were popular campsites for river pirates, who harassed the ships and docks of New York City and New Jersey, from the colonial period through the early 19th century.

Kearny's location between the burgeoning cities of Newark and Jersey City increasingly made the township a convenient location for residence, industry, and commerce. Multiple textile mills and linoleum factories were established in Kearny during the 1880s and 1890s, and the town's population rapidly increased. Initially, most of Kearny's industrial development was located close to its downtown area, east of Midland Avenue (west of the APE). However, by the 1910s and 1920s, industrial development occurred in the low-lying marshland along the Hackensack River. Within the APE in Kearny, the Diamond Shamrock property was developed by the Martin Dennis Company, which produced chemicals for leather tanning; the White Tar Company produced moth repellents, disinfectants, and deodorizers; and the Thomas A. Edison Company's Emark Battery Corporation produced batteries.

Between 1902 and 1910, the Pennsylvania Railroad constructed a new branch through the Hackensack Meadows, tunneling beneath the Hudson River and across Manhattan (TLC 2005:60). The Hackensack Meadows branch is now part of Amtrak's Northeast Corridor and runs through the APE in Secaucus and Kearny.

From 1950 to 1952, the New Jersey Turnpike was constructed through the APE. The roadway was constructed through the marshes using a combination of crushed stone embankments, sand-filled caissons, and viaducts. A bridge was constructed over the Hackensack River between Secaucus and Kearny, its approach passing below the Pulaski Skyway in Kearny. The New Jersey Turnpike's interchange at Route 3 spurred the development of large commercial facilities in Secaucus, as well several corporate headquarters. The economy of Secaucus thus shifted from one based on pig farming, industry, and institutions, to one based on transportation and suburban development.

In 1969, the Hackensack Meadowlands Development Commission was founded. The initial purpose of the Commission was to oversee planning and development and to regulate garbage disposal. By the 1970s, conservation of the Meadowlands had become a more popular cause and the Hackensack Meadowlands Development Commission (which changed its name to the New Jersey Meadowlands Commission in 2001) focused its efforts on remediation and protection of the remaining wetlands.

C. EXISTING CONDITIONS

ARCHAEOLOGICAL RESOURCES

The project area is located within the Newark Basin portion of New Jersey's Piedmont Physiographic Province and is characterized by the meadowlands of the Hackensack River Valley and infrequent topographic features such as Snake Hill, a diabase rock outcrop that is part of the Bergen Ridge. The ground surface of the APE has been significantly modified over the past century due to transportation, commercial, and industrial development. Today the APE is characterized by a concentration of industrial facilities on the Kearny portion, on the west side of the Hackensack River, undeveloped salt marsh and upland on the Secaucus side, on the east side of the river, and multiple rail lines and roads, including the New Jersey Turnpike, extending the entire length of the corridor.

Information concerning known and potential archaeological resources in the archaeological APE was developed through a review of previously conducted cultural resource investigations performed in the project area vicinity, listings of previously identified archaeological sites on file at the NJHPO and NJSM, and a review of relevant sensitivity assessments.

PREVIOUSLY CONDUCTED CULTURAL RESOURCE INVESTIGATIONS

A search of archaeological reports and research materials on file at the NJHPO indicate that several cultural resources investigations have been conducted within one half mile of the project area. An inventory of these investigations is provided in Appendix B.

An archaeological sensitivity assessment for the Northeast Corridor (DeLeuw Cather Parsons, 1979), which runs through the present APE, identified two "Prehistoric Archaeological Zones" in or near the present APE: *Site No. 2*, encompassing Snake Hill, partially within the APE; and *Site No. 4*, along Penhorn Creek in Secaucus Road in Secaucus, northeast of the APE. More recent surveys of this area conducted as part of the Secaucus Interchange Project and the ARC DEIS have resulted in a lowering of the prehistoric sensitivity of Snake Hill to low based on the effect of historic and modern disturbance to the area. The Northeast Corridor Survey is summarized in greater detail in Appendix B.

Previous documentary studies and field surveys have also identified the Historic Cemeteries of Hudson County, a historic burial ground and S/NR-eligible archaeological resource located within and adjacent to the APE which is shown in Figure 5.2-2. A detailed description of previous investigations of the Historic Cemeteries of Hudson County is provided in Appendix B.

PREVIOUSLY IDENTIFIED ARCHAEOLOGICAL SITES

Previously Identified Prehistoric Sites

A review of the files at the NJHPO and the NJSM, and cultural resource surveys of projects in the immediate vicinity indicate that there are no known Native American archaeological sites within a one-mile radius of the project area. A review of some Native American sites identified in the region is provided in the "Prehistoric Context" section of Appendix B.

Previously Identified Historic Sites

One historic-period archaeological site within a mile of the archaeological APE for the project is on file at the NJSM, recorded in the NJSM site files as the Hudson County Potter's Field Burial

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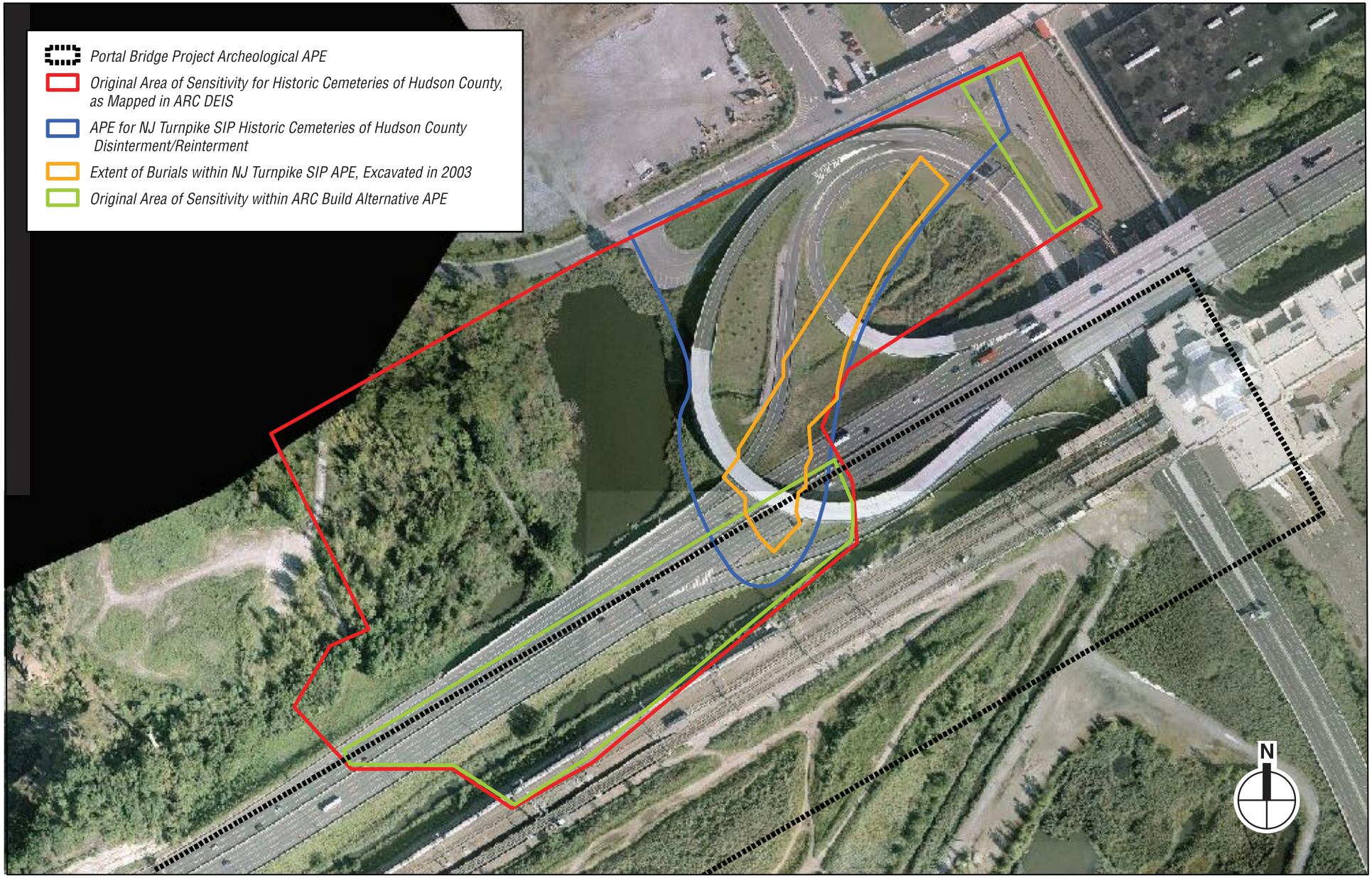
Portal Bridge Project Archeological APE
Original Area of Sensitivity for Historic Cemeteries of Hudson County, as Mapped in ARC DEIS
APE for NJ Turnpike SIP Historic Cemeteries of Hudson County Disinterment/Reinterment
Extent of Burials within NJ Turnpike SIP APE, Excavated in 2003
Original Area of Sensitivity within ARC Build Alternative APE
N
0
200
400 FEET
SCALE

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Hudson County Burial Grounds Sensitivity Map

Figure 5.2-2

Ground (NJSM #28-Hd-30, LBG). The Historic Cemeteries of Hudson County are described in detail in other sections of this report.

ARCHAEOLOGICAL POTENTIAL OF APE

The prehistoric sensitivity of the Meadowlands has been considered in several studies (for example: HCI 1990, Grossman 1992, and Thieme 1997 [summarized in TLC 2005]). These studies generally have concluded that the sensitivity for Paleo-Indian through Middle Archaic period resources in the area is low because of the types of sites expected during this time period and the instability of the Hackensack River channel prior to the formation of the Meadowlands, resulting in a high potential for site loss. The potential for Middle Archaic to Late Woodland sites is equally low or lower given the established preference for well-drained soils in site selection, particularly given the availability of a better site location on nearby Snake Hill.

Though Snake Hill was identified as having prehistoric archaeological potential by the authors of the Northeast Corridor Study (DeLeuw Cather Parsons, 1979), the ARC DEIS (TLC 2005) and the Secaucus Interchange Project (LBG 2005) subsequently concluded that the area has low sensitivity for prehistoric resources due to extensive historic disturbance and development in the area.

As discussed above in the historic-period context, the Kearny portion of the APE remained undeveloped through the early 20th century, except for construction of railroad lines and roads such as the Belleville Turnpike. The only reference for earlier historic activity within this area is from local histories, which suggest that the Meadowlands in both Kearny and Secaucus were the site of river pirate camps from the colonial period through the mid-19th century. One of their camps was reportedly located in the cedar swamps adjacent to Snake Hill in Kearny, and was reached by a tidal creek or stream (Stinson 1915: 369). The referenced creek is possibly Saw Mill Creek, located approximately 3,000 feet north of the archaeological APE. However, Stinson does not provide the source of his information, and there has never been a reported archaeological confirmation. It is theoretically possible that other tidal creeks or streams in the vicinity, such as the former inlet called Dead Horse Creek located on what is now the Diamond Shamrock property, were accessed by pirates during this period. Beginning in 1916 the Kearny portion of the APE was intensively industrialized and in 1975 Dead Horse Creek on the Diamond Shamrock property was diverted into a culvert a couple hundred feet south of its original course (TLC 2005). Dead Horse Creek was then sealed off from the Hackensack River with a concrete gate and filled with clay (Ibid). It is unknown what types of archaeological remains could be associated river pirate activity in the vicinity.

The Historic Cemeteries of Hudson County was identified as an S/NR-eligible archaeological resource located partly within the APE. As discussed above, the resource has been extensively studied. Most recently, a geophysical investigation completed in February 2007 identified four anomalies between the New Jersey Turnpike and the Northeast Corridor, to the west of the Secaucus Transfer Station, within the APE. The anomalies could potentially represent burial shafts (GGI 2007: 2). Due to refined alignments developed subsequent to the completion of the Geophysical Investigation Report, the ARC project is no longer expected to impact the areas identified by the ARC DEIS as sensitive for remains relating to the Historic Cemeteries of Hudson County. Although no further archaeological testing in those areas is planned in association with the ARC project, the ARC project does plan to conduct testing south of the Northeast Corridor in the area of the Malanka Landfill in order to confirm that no significant buried resources exist in this area. However, those areas identified by the ARC DEIS as sensitive

for remains relating to the Historic Cemeteries of Hudson County are considered archaeologically sensitive.

The archaeological APE has an overall low potential for the presence of archaeological sites except for the area between the New Jersey Turnpike and the Northeast Corridor, to the west of the Secaucus Transfer Station, which is considered sensitive for the presence of burials associated with the Historic Cemeteries of Hudson County.

ARCHITECTURAL RESOURCES

There are seven previously identified architectural resources in the Portal Bridge APE, all of which have been determined eligible for the NR, and one of which has been listed on the New Jersey SR. One additional architectural resource was identified within the APE and was determined S/NR eligible as part of this project (see Table 5.2-1 and Figure 5.2-3).[1]

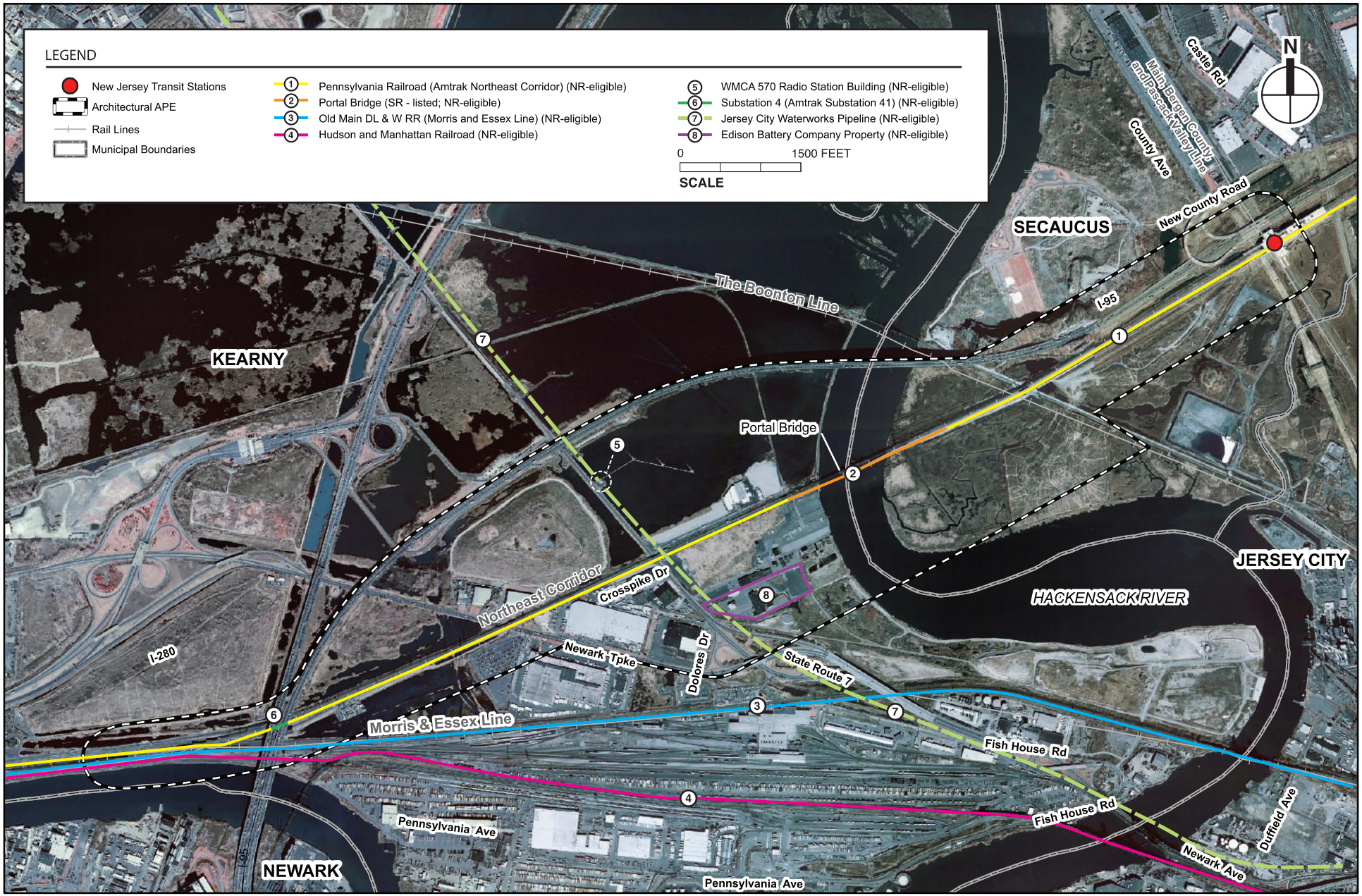
Pennsylvania Railroad New York to Philadelphia Historic District (Northeast Corridor, Pennsylvania to New York, within APE in Secaucus and Kearny) The extension of the Pennsylvania Railroad, built over the first decade of the twentieth century, consisted of eight miles of electrified rail line between Midtown Manhattan and Newark, New Jersey. The same project also included the construction of New York Pennsylvania Station (PSNY) and a system of railroad tubes beneath the Hudson River between New York and New Jersey (completed in 1910). The Pennsylvania Railroad system also included several bridges that carry the railroad over water, marsh, and other railroads. Of the three center-bearing swing bridges that were constructed as part of the original system, the Portal Bridge, built in 1907, is the only one remaining. The Pennsylvania Railroad, now known as the Northeast Corridor, was determined eligible for the S/NR on January 18, 1978.

Old Main Delaware Lackawanna & Western Rail Road (Morris & Essex Rail Line right-of-way from Hudson, Hoboken City, to Warren, Washington Township, and along Warren Railroad to the Delaware River; within APE in Kearny). The Delaware Lackawanna & Western (DL&W) Railroad was chartered in 1815, to transport anthracite coal from Pennsylvania's Lackawanna Valley to Hoboken where it could be distributed to eastern markets. The DL&W Line later offered passenger service, allowing inhabitants of New Jersey towns and countryside to access the ferries to New York City located in Hoboken. The DL&W set standards for passenger service and safety at the turn of the century, and was the first line to use telephones rather than telegraphs for train dispatching. Suburban stations had a distinctive standardized design featuring low hipped roofs and porches. The NJHPO determined the railroad eligible for the S/NR on September 24, 1996.

Portal Bridge (Northeast Corridor, Milepost 6.1 over the Hackensack River) The Portal Bridge carries the Pennsylvania Railroad (Northeast Corridor) over the Hackensack River between Secaucus and Kearny. It is a double-track seven-span bridge with six deck girder spans and a center-bearing Warren through-truss swing-span. The Bessemer-steel superstructure is raised 23 feet above mean-high-water on rock-faced piers. The Portal Bridge was manufactured and designed by the

[1] New Jersey historic resources inventory forms were completed for two potential architectural resources as part of the DEIS (see Appendix B, "Historic Resources"). The former Edison Battery Company Property was determined S/NR eligible, while the former White Tar Company Property was determined not eligible.

5.8.08



NJ TRANSIT
PORTAL BRIDGE CAPACITY
ENHANCEMENT PROJECT

Architectural Resources
Figure 5.2-3

Pennsylvania Steel Company in 1907 as part of original construction of the Pennsylvania Railroad system.

Swing bridges were a popular variety of moveable bridge in the 19th century, and were used in place of bascule or lift bridges when the waterway was wide enough to allow vessels to pass on the side of the bridge. The design of center-bearing (as opposed to rim-bearing) swing bridges was perfected between 1887 and 1900. They were electrically controlled beginning in the early 20th century. Portal Bridge is a manifestation of these engineering developments. The bridge and associated tracks in Kearny and Secaucus form the most heavily traveled portion of the Northeast Corridor.

Table 5.2-1
Architectural Resources within Study Area

Ref No	Resource Name	Location	Municipality in Study Area	NR-Listed	SR-Listed	NR-Eligible	SR-Eligible
KNOWN RESOURCES							
1	Pennsylvania Railroad New York to Philadelphia Historic District	Northeast Corridor, Pennsylvania to New York	Kearny & Secaucus			X	X
2	Portal Bridge	Northeast Corridor, Milepost 6.1 over the Hackensack River	Kearny & Secaucus		X	X	
3	Old Main DL&W Railroad Historic District	Morris & Essex Railroad ROW from Hudson, Hoboken City, to Warren, Washington Twp., and along Warren Railroad to the Delaware River	Kearny			X	X
4	Hudson & Manhattan Railroad	Manhattan to Newark, Penn Station (PATH)	Kearny			X	X
5	WMCA 570 Radio Station Relay/Transmitter Building	Belleville Turnpike at New Jersey Turnpike	Kearny			X	X
6	Substation 4 (Amtrak Substation 41)	Northeast Corridor (former Pennsylvania Railroad) at New Jersey Turnpike	Kearny			X	X
7	Jersey City Waterworks Pipeline	Belleville Turnpike in APE	Kearny			X	X
8	Former Edison Battery Property (Standard Chlorine Chemical Company property)*	Standard Chlorine Chemical Company property south of the Northeast Corridor, west of the Hackensack River	Kearny			X	X

Notes: See Figure 5.2-3 for reference.
* Determined S/NR-eligible as part of this project

The Portal Bridge has not been significantly altered since its construction, though minor repairs and updates have been made. Catenary lift machinery and wedge block machinery were installed in 1931. Minor repairs were also made in the 1970s, including the replacement of the operator's house, repointing and masonry repair, and replacement in kind of certain failing bolts, beams, braces and

other structural members. In the late 1990s there were major repairs and replacements of the bridge's miter rails, and a rehabilitation of the bridge's mechanical and electrical components.

The Portal Bridge was determined eligible for the NR in 1978; and was listed on the SR in 1982. The bridge is also a contributing element in the Pennsylvania Railroad Historic District, determined S/NR-eligible in 1978.

Hudson & Manhattan Railroad (Manhattan to Newark, Penn Station; within APE in Kearny). The Hudson & Manhattan (H&M) Railroad was planned as early as the 1860s as a passenger railroad which would run in a tunnel between New York and New Jersey, relieving Manhattan's congestion and facilitating commuting to and from suburban New Jersey. DeWitt Haskins formed the Hudson Tunnel Railroad Company, and work commenced haltingly during the 1870s and 1880s, delayed by engineering and financial difficulties as well as an 1874 injunction to halt work filed by the Lackawanna Railroad, which feared the tunnel would destroy business for its passenger ferry connections. The work was resumed in earnest in 1889 by William McAdoo, who planned to finish the first cross-Hudson tunnel and create an electrified railroad system. McAdoo formed the H&M Railroad Company, and in 1902 commenced tunneling under the river, employing cutting-edge mechanical shield techniques to facilitate construction. The complex system, when completed in 1908, included multiple stations in uptown and downtown Manhattan; a total of seventeen miles of tunnel including the Hudson River Tubes; a station in Jersey City; and the railroad through the New Jersey Meadowlands to Newark. The H&M became renowned for customer service and convenience, reducing commuting times considerably. Much of the original H&M system is now operated by the Port Authority of New York and New Jersey as the "PATH," which continues to be a vital commuter rail line. The H&M Railroad was determined eligible for the S/NR on February 27, 2002.

WMCA 570 Radio Station Relay/Transmitter Building (Belleville Turnpike near New Jersey Turnpike). The WMCA Radio Station House is located on a square concrete pad in the marshy area between the Hackensack River and the Belleville Turnpike in Kearny. The station is a single-story building, designed in the Art Moderne style. Constructed in 1939-40, the brick structure is clad in square white synthetic tiles, and features curved corners and glass-block windows. Neon signs reading "WMCA" and "570" are located on the north and south facades. A wood causeway over a portion of the Hackensack River extends north from the concrete pad. Three self-standing transmitter towers are located along the causeway; each is 335 feet tall and was produced by the Truscon Company.

WMCA first aired on February 6, 1925 from the McAlpin Hotel on 34th Street and Broadway in Manhattan. During the first fifteen years of its existence, WMCA aired a variety of programming from music and drama to New York Giants baseball games. In 1939-40, WMCA moved to its present location in Kearny, New Jersey. In 1943, the radio station was bought by the Straus family. In the 1950s, WMCA entered its most successful period, the era of the "Good Guys," a group of disc jockey staff that played popular rock music and became legendary for their personalities and their eye for hit bands. The Good Guys played popular songs in a top-40 format; and in 1963 had the distinction of airing the first Beatles record on New York radio. Between 1964 and 1968 the radio station was rated by *Billboard* magazine New York's most influential radio station for new records.

By the early 1970s, WMCA found a new niche in talk radio, with a new format called "Dial-Log Radio." Sports also took a larger role; WMCA aired the New York Islanders and the New York Yankees, with the famous broadcasting crew of Frank Messer, Phil Rizzuto, and Bill White. In the late 1980s, the Straus family sold WMCA. After almost fifty years under their ownership,

WMCA was the last family-owned radio station in New York. The station was sold to Salem Communications. After a short period with a financial news focus, WMCA has more recently adopted a Christian radio programming focus.

The NJHPO determined the property eligible for the S/NR on December 23, 2003.

Substation 4 Building (Amtrak Substation 41) (Northeast Corridor at New Jersey Turnpike, Kearny). The building at substation 4, is a two-and-a-half-story red brick structure with large round-arched windows and doorways. The New Jersey Turnpike is located almost directly above the substation building. The building has a large stone plaque set into the façade, inscribed with the words "Sub-Station 4, Pennsylvania Railroad." According to the inventory form completed for this structure, the building contains a single room on the basement and second-story levels. The first floor contains a workspace and "separate battery and wash rooms for employees."

The Meadows Division of the Pennsylvania Railroad (now Northeast Corridor) was completed and put into service in 1910. Substation 4 was built as part of the original DC electrical transmission system, supplied electric traction power to this section of the railroad. This portion of the railroad was converted to an AC system in the early 1930s.

At the time writing of the S/NR eligibility assessment for the substation (1994), the structure's function was replaced by the fenced-in compound designated as Substation 41. NJHPO determined the Substation 4 building eligible for the S/NR on September 12, 1994.

Jersey City Waterworks Pipeline (along Belleville Turnpike in APE). The portion of the Jersey City Waterworks Pipeline located within the APE runs along the Belleville Turnpike in Kearny (insert more info on depth and exact location) and consists of three parallel pipelines. These three pipelines consist of a 20-inch-diameter pipe laid in 1852; a 36-inch-diameter pipe laid in 1861-3; and a 36-inch-diameter pipe laid in 1872. The Jersey City Waterworks Pipeline was determined eligible for the S/NR on May 7, 1999.

Former Edison Battery Company Property (Belleville Turnpike, Kearny). The former Edison Battery Company property was determined S/NR-eligible as part of this project. A survey form, was submitted to the NJHPO, which determined the property S/NR eligible in a comment letter dated April 8, 2008 (see Appendix B, "Historic Resources"). The former Thomas A. Edison Inc. Battery Factory complex is located in the southeastern portion of the Standard Chlorine Chemical Company property south of the Northeast Corridor and the Diamond Shamrock property; west of the Hackensack River; and east of the Belleville Turnpike, in Kearny (see Figure 5.2-3; see also NJHPO survey form, Appendix B). The complex consists of five buildings, designed in the Art Deco style: a Gate House; an Office & Laboratory; a Packing & Shipping Building; a Service & Maintenance Building; and a Boiler House.

Thomas A. Edison (1847-1931), one of the most prolific inventors in history, is best remembered as the inventor of the phonograph, developer of the light bulb, and the creator of the first industrial research laboratory, in Menlo Park. From the 1890s through the early 20th century, Edison strove to develop a powerful, durable, and light-weight alkaline car battery to become the basis for a successful electric automobile. Edison succeeded in developing a battery that met his expectations in 1910. It did not achieve the success he had hoped in the car market, however, due to Henry Ford's 1909 release of the gasoline-engine Model T. Nevertheless, it was widely used in trucks and commercial and factory vehicles and became one of his most lucrative inventions (IEEE 2007).

The Thomas A. Edison Company purchased the Kearny property in 1917, and the factory buildings were constructed in the mid 1920s. The existence of the Office & Laboratory building on the Kearny site is doubtless a reflection of Edison's emphasis on research and on-going laboratory development.

The property was later purchased by the Koppers Company, which merged the site with the parcel to the north, and produced tar products there. Standard Chlorine Chemical Company operated on the site from 1962 to 1993.

D. NO ACTION ALTERNATIVE

It is possible that the S/NR-eligible resources identified in the APE could be listed on the S/NR in the future. Architectural resources that are listed on the National Register or that have been found eligible for listing are given a measure of protection from the effects of federally sponsored or assisted projects under Section 106 of the National Historic Preservation Act. Although preservation is not mandated, federal agencies must attempt to avoid adverse impacts on such resources through a consultation process. Properties listed on the State Register are similarly protected against impacts resulting from state-sponsored or state-assisted projects under the New Jersey Register of Historic Places Act. Private property owners using private funds can, however, alter or demolish their properties without such a review process.

Chapter 3, "Project Alternatives," describes several regional transportation projects that are expected to be completed by 2030. As described in Chapter 5.1, "Land Use and Social Conditions," several land use, open space, and wetland restoration projects are also likely to be completed by 2030, the Portal Bridge Capacity Enhancement Project's build year. Some of the projects discussed below are speculative; and many of them are in preliminary planning stages. In most cases, therefore, it is not possible to determine if these planned projects would affect historic resources in the APE.

Several of the land use goals outlined in NJMC's 2004 Land Use Plan could be implemented by the year 2030. This plan seeks to encourage certain types of uses or development for certain portions of the APE and vicinity, including transportation and industrial development; resort recreation development; environmental conservation; etc.

Remediation of contaminated soils at the Standard Chlorine and Diamond Shamrock sites is planned and would be complete by the project's future analysis year. There are currently no specific development plans for these sites, however, NJMC's Land Use Plan identifies these sites as within the area planned for intermodal or industrial uses. The remediation and/or potential redevelopment of the site may impact the Former Edison Battery Company complex.

Under the 2007 Hudson County Park Master Plan, Laurel Hill Park, located partly within the APE in Secaucus, is slated for expansion through the recently-acquired parcel of land directly south of Laurel Hill Park and south of the New Jersey Turnpike. Under the same Master Plan, the existing park property will be expanded to include the construction of two new soccer fields, two new basketball courts, a synthetic turf sports facility, and a cricket facility. There is no official completion date for the Laurel Hill Park improvements and expansion. The Laurel Hill Park expansion plans are not anticipated to directly impact the cultural resources identified in the APE.

The Secaucus Transit Village, located in the northeastern corner of the study area, is a planned mixed-use development focusing on the Secaucus Transfer Station, which was opened in 2003.

If built in its entirety, the phased development plan would result in 1,850 residential units, 750,000 square feet of retail and office space, a 500-room hotel, a linear park and restricted parking for residents of the village. The first phase of development of the Secaucus Transit Village is already under construction in the parcel of land immediately east of Laurel Hill Park. The rest of the area slated for this planned development is currently occupied by industrial uses. For the purposes of this analysis, it is assumed the Secaucus Transit Village will be complete by the project's analysis year. Though the first phase of the development will not directly affect historic resources in the APE, later phases of the Secaucus Transit Village project are still in preliminary planning stages, and potential impacts of these aspects of the project on historic resources in the APE can not yet be determined.

The East Coast Greenway, a planned 3,000-mile long continuous cyclist and pedestrian trail, would stretch from Calais, Maine south to Key West, Florida. There are several potential on- and off-road routes currently proposed for the segment of the East Coast Greenway near the APE. The *New Jersey Transportation Improvement Program (TIP) for Fiscal Years 2007-2010* includes a potential 2.5-mile segment of the project, sponsored by the New Jersey Department of Transportation (NJDOT), to include sidewalks and designated bike lanes on both sides of Belleville Turnpike (Route 7) and from Newark Industrial Line to the intersection of Routes 1&9 and Newark Avenue. This segment will cross the Hackensack River via the planned NJDOT Wittpenn Bridge replacement. The routing and timeframe for potential portions of the East Coast Greenway within the APE are unclear. If the project were to occur on the Belleville Turnpike in this location, it would be in close proximity to multiple historic resources identified in the APE, including the New Jersey Waterworks Pipeline (S/NR-eligible), the WMCA Radio Station (S/NR-eligible), and the Former Edison Battery Company complex (S/NR-eligible).

E. PROBABLE IMPACTS OF THE BUILD ALTERNATIVES

As discussed in Chapter 3, "Project Alternatives," four feasible build alternatives (Alternatives FE, FS, DE, and DS) have been identified and Alternative DS is the preferred alternative. This section discusses the probable impacts of the build alternatives on archaeological and architectural resources.

ARCHAEOLOGICAL RESOURCES

As described above, an adverse archaeological effect is defined as any disturbance or damage to a potential archaeological resource. Such an effect could occur if construction were to disturb the soil at the same depth where that resource was present. The only archaeological resource identified in the APE is the Historic Cemeteries of Hudson County (S/NR-eligible) in Secaucus. No other areas of archaeological sensitivity were identified.

All of the build alternatives involve modification of portions of the Northeast Corridor within the archaeological APE. Portions of the area sensitive for human remains and funerary archaeological artifacts relating to the Historic Cemeteries of Hudson County could be disturbed by the proposed demolition and reconstruction of the Northeast Corridor in Secaucus. At this stage in the project, detailed plans for the extent of subsurface disturbance are not yet available, and therefore the potential effects of the construction on the Historic Cemeteries of Hudson County area of archaeological sensitivity cannot yet be fully determined.

As engineering proceeds, the proposed vertical (below grade) and horizontal extents of the proposed project construction will be compared to the anticipated vertical and horizontal extents

of the archaeologically sensitive areas. As defined in detail in the Memorandum of Agreement (MOA) in Appendix B, if this further impact analysis indicates potential project effects related to the Historic Cemeteries of Hudson County, subsurface testing to identify the presence or absence of archaeological resources would be completed for locations that would be affected by the project. If locations of burials cannot be avoided, a specific testing plan, building on previous investigations prepared for the ARC project will be developed in consultation with NJHPO and with the appropriate cemetery descendant community(s) and consulting parties.

ARCHITECTURAL RESOURCES

As described below, none of the four build alternatives would affect the following architectural resources: the Old Main Delaware, Lackawanna, & Western Historic District (S/NR-eligible); the Hudson & Manhattan Railroad (S/NR-eligible); the WMCA Radio Transmission Building (S/NR-eligible); or the Former Edison Battery Company complex (S/NR-eligible) (See Table 5.2-2). None of these resources are expected to be directly affected by project construction. Furthermore, while the context of these resources would be somewhat altered by the removal of the Portal Bridge (SR-listed; NR-eligible), the construction of two new bridges carrying the Northeast Corridor over the Hackensack River, and other proposed changes to the Northeast Corridor, the overall context of these resources is not expected to be substantially changed. The project would replace existing railroad-related structures with new railroad-related structures, and therefore, the use, atmosphere, and overall conditions of the resources' context would remain largely the same.

All of the build alternatives would have an adverse effect on the Portal Bridge (SR-listed; NR-eligible), since all of the alternatives would result in its decommissioning and removal. As set forth in the MOA, ongoing consultation would be undertaken among FRA, NJHPO, Amtrak, and NJ TRANSIT as project engineering proceeds to minimize or mitigate the adverse effects to the Portal Bridge.

Table 5.2-2
Potential Impacts to Historic Resources within Study Area

Ref No	Resource Name	Designation Status	May be Adversely Affected by Build Alternatives	No Adverse Effects Anticipated
KNOWN ARCHITECTURAL RESOURCES				
1	Pennsylvania Railroad New York to Philadelphia Historic District	S/NR-Eligible	X	
2	Portal Bridge	SR-Listed/ NR-Eligible	X	
3	Old Main DL&W Railroad Historic District	S/NR-Eligible		X
4	Hudson & Manhattan Railroad	S/NR-Eligible		X
5	WMCA 570 Radio Station Relay/Transmitter Building	S/NR-Eligible		X
6	Substation 4 (Amtrak Substation 41)	S/NR-Eligible	X	
7	Jersey City Waterworks Pipeline	S/NR-Eligible	X	
8	Former Edison Battery Property (Standard Chlorine Chemical Company property)*	S/NR-Eligible		X

Notes: See Figure 5.2-3 for reference.
*As described in the MOA (see Appendix B), other concurrently planned projects may affect the former Edison Battery Company Property, and such effects, if they occur, could constitute a cumulative adverse effect.

All of the build alternatives are expected to result in modifications of the Northeast Corridor (a.k.a. Pennsylvania Railroad Historic District [S/NR-eligible]) within the APE. While Pennsylvania Railroad Historic District retains historic integrity overall, it should be noted that the historic district in the study area has undergone extensive alterations since the time of its S/NR eligibility determination in 1978. In the 1990s, the Kearny Connection was created by linking the New Jersey Transit Morristown Line (Morris & Essex Railroad) with the Northeast Corridor. The Kearny Connection, including Swift Interlocking, in the western portion of the study area in Kearny, involved the replacement and/or new installation of associated traction power facilities (catenary and catenary poles and a new substation), signal instrument houses, lineside signals, retaining walls, crash walls beneath the New Jersey Turnpike, and structures to support the new connecting tracks. The Portal Signal Tower was demolished in the mid-1990s, further altering the fabric of the historic district. Most recently, the construction of the Secaucus Transfer Station and associated modifications to the Northeast Corridor also resulted in substantial alterations to the fabric of the Pennsylvania Railroad Historic District in the study area. As part of the Secaucus Transfer Station project, the following changes were made in the Secaucus portion of the Northeast Corridor in the study area: construction of new tracks 'A' and 'B'; new island platforms, lineside signals, signal instrument houses; new tracks (rails, ties, ballast, turnouts) and structures to support new and relocated tracks; temporary and permanent access roads; new catenary supports and catenary; and new and relocated utility lines and lighting systems. In addition to these alterations, numerous 'state of good repair' projects have replaced or repaired rail, ties, ballast, catenary system components, and other physical features of the Northeast Corridor in the study area.

In light of the extensive recent alterations to the fabric and appearance of the Pennsylvania Railroad Historic District in the study area, the anticipated effects of all four build alternatives would be adverse insofar as they would add to the cumulative alterations of the resource's original fabric and appearance that have occurred in the study area in recent decades (see Chapter 7, "Secondary and Cumulative Effects"). The adverse effects of all four build alternatives on the Pennsylvania Railroad Historic District would include shifting the alignment of the Northeast Corridor to connect with the new northern and southern bridges, replacement of portions of the railroad's physical fabric (though much was replaced in recent years, as described above), and the removal of the Portal Bridge.

As set forth in the MOA, ongoing consultation would be undertaken among FRA, NJHPO, Amtrak, and NJ TRANSIT as project designs progress, to minimize or mitigate the potential for adverse effects to the Pennsylvania Railroad Historic District. As part of all the build alternatives, the bridge structure across Belleville Turnpike in Kearny would be replaced with multiple bridges to carry Tracks 1 through 5 across the roadway. These bridges would be constructed in the immediate vicinity of the Jersey City Waterworks Pipeline (S/NR-eligible). As engineering progresses, the proposed project would, to the extent feasible, strive to avoid adversely impacting the Jersey City Waterworks Pipeline. Similarly, no physical changes are proposed to Substation 4 (S/NR-eligible) in any of the build alternatives; however, project-related construction undertaken in all of the build alternatives could occur in close proximity to Substation 4, and therefore could result in accidental damage to the resource. Ongoing consultation will be undertaken among FRA, NJHPO, Amtrak, and NJ TRANSIT as project designs progress, to avoid or minimize the potential for adverse effects on the Jersey City Waterworks Pipeline and Substation 4. As part of this consultation, protection measures, in the form of a Construction Protection Plan, would be developed in consultation with NJHPO, as set forth in the project's MOA. The Construction Protection Plan would set forth the specific

measures to be used, and specifications that would be applied, to protect these architectural resources during the construction period.

F. MITIGATION MEASURES

As mandated by Section 106 of the NHPA of 1966, Amtrak and NJ TRANSIT have participated in an ongoing consultation process with the NJHPO with respect to potential effects on archaeological and architectural resources. As part of this ongoing process, measures will be explored to avoid or minimize to the extent practicable any significant adverse effects to archaeological and architectural resources. Development of these mitigation measures is set forth in an MOA, executed by FRA, NJHPO, Amtrak, and NJ TRANSIT and included in Appendix B. Since all four of the build alternatives (Alternatives DE, FE, FS, and Preferred Alternative DS) would result in the same adverse effects, the executed MOA applies to all of the alternatives.

The MOA lists the historic resources that may be affected by the project and also describes the continuing consultation process that will be conducted as project designs evolve. The MOA also describes the measures to be implemented during the project's design process, to avoid, minimize, or mitigate adverse effects of the project on historic resources.

Amtrak and NJ TRANSIT will implement the various provisions of the MOA. These include:

1. Ongoing consultation with NJHPO with respect to the design of project elements that could disturb archaeologically sensitive areas, physically alter architectural resources, or affect the context or setting of an architectural resource, including those potential adverse effects identified on the Historic Cemeteries of Hudson County, the Portal Bridge, the Northeast Corridor, Substation 4, and the Jersey City Waterworks Pipeline;

2. Development and implementation of the Construction Protection Plan (CPP) to avoid inadvertent construction-period impacts on the Jersey City Waterworks Pipeline and Substation 4. The CPP would be developed in consultation with NJHPO by a licensed professional engineer prior to any project construction occurring within 90 feet of Substation 4. The CPP would include provisions for pre-construction inspection and documentation, vibration, settlement, and crack monitoring, as appropriate, and stop-work orders.

3. Where adverse effects to architectural resources cannot be avoided, mitigation measures would be developed and implemented as per the provisions of the MOA. Mitigation for adverse effects on the Portal Bridge and Pennsylvania Railroad Historic District would include Historic American Engineering Record (HAER) documentation for Portal Bridge and the portions of the Pennsylvania Railroad Historic District within the APE; ongoing consultation with NJHPO regarding the design of the new bridge; salvage of elements of the affected historic resources; development of an interpretive exhibit in a park, greenway, or public space, that would present the history of the Pennsylvania Railroad and Portal Bridge, that could include but would not be limited to salvaged elements of these resources and signage; and additional documentation interpreting the history and significance of the Portal Bridge and Pennsylvania Railroad Historic District in the form of a website.

4. Where locations identified as containing burials cannot be avoided, Amtrak and NJ TRANSIT will follow the procedures identified in the MOA concerning testing and excavation to avoid any insensitive disturbance to human remains in the Historic Cemeteries of Hudson County, including, but not limited to, conducting outreach to and consulting with appropriate descendant communities prior to any archaeological testing and construction, preparing a testing plan for review by NJHPO,

and requiring a physical anthropologist/forensic archaeologist to be on-call or on-site in the event that skeletal material is encountered during archaeological testing or project construction. The Historic Cemeteries of Hudson County fall within the jurisdiction of the New Jersey Cemetery Act, Title 8A for the New Jersey Statutes (N.J.S.) (State of New Jersey 2002). The New Jersey Cemetery Board administers the Act, and the New Jersey Attorney General oversees actions and proceedings of the Cemetery Board. Any disinterment and reinterment would also require approval by the Chancery Division of the Superior Court of New Jersey.

5. Because the Project could result in a physical effect to an SR-listed property (the Portal Bridge), NJ TRANSIT will submit an Application for Project Authorization to the NJHPO pursuant to the New Jersey Register of Historic Places (N.J.A.C. 7:4). NJ TRANSIT, in coordination with Amtrak, FRA, and NJHPO, will also fulfill any additional compliance obligations stipulated in N.J.A.C. 7:4-7 ("Review Procedures for Projects Encroaching upon New Jersey Register Properties"), as appropriate.

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Chapter 5.3: Visual and Aesthetic Considerations

A. INTRODUCTION AND METHODOLOGY

This chapter considers the effects of the Portal Bridge Capacity Enhancement Project on the visual character and aesthetic conditions of the immediate area. It has been prepared in accordance with the guidelines for visual analyses contained in federal documents prepared by the Federal Highway Administration (FHWA) including *Guidance for Preparing and Processing Environmental and 4(f) Documents* (1987), *Environmental Impact Statement Visual Impact Discussion* (undated), and *Guidance Material on the Preparation of Visual Impact Assessments* (1986), which is the standard U.S. Department of Transportation (USDOT) methodology for assessing potential impacts to visual and aesthetic resources.

The proposed project would replace the existing Portal Bridge with two new bridges, to be located north and either south of the existing bridge or on the existing alignment. The tops of the new bridges would be a maximum of 43 feet higher than the top of the existing Portal Bridge. The proposed project would result in the construction of either a fly-over (Alternatives FE and FS) or a duck-under (Alternatives DE and DS) structure in the vicinity of the Belleville Turnpike in Kearny, as described in Chapter 3, "Project Alternatives." The top of the fly-over structure would be a maximum of 60 feet above ground level, roughly 30 feet higher than the top of the existing Northeast Corridor rails in that area.

This analysis considers the effects of the proposed project on locations from which elements of it would be visible. The study area for visual resources has been delineated as follows: it is bounded on the west by a line 2,100 feet west of the intersection of the Northeast Corridor and the New Jersey Turnpike; and on the east by a line 400 feet east of the Secaucus Transfer Station. The northern boundary of the study area extends 500 feet between the western boundary and the intersection of the Northeast Corridor and the New Jersey Turnpike; from there it runs along the northern edge of the eastern spur of the New Jersey Turnpike to the Hackensack River, where the study area extends northward to include the entirety of Laurel Hill Park. The southern boundary of the study area extends 500 feet south of the Northeast Corridor between the western boundary and the intersection of the Newark Turnpike; the study area runs along the outer edge of the Newark Turnpike between that point and the intersection of the Belleville Turnpike (State Route 7); between the Belleville Turnpike and eastern boundary, the study area extends 1,500 feet south of the railroad (see Figure 5.3-1). Additional geographical elements can be found in Figure 3-1.

To prepare this analysis, information for this analysis was collected through field visits. Visually sensitive locations and viewer groups were identified, and duration of views assessed to determine any potential effects.

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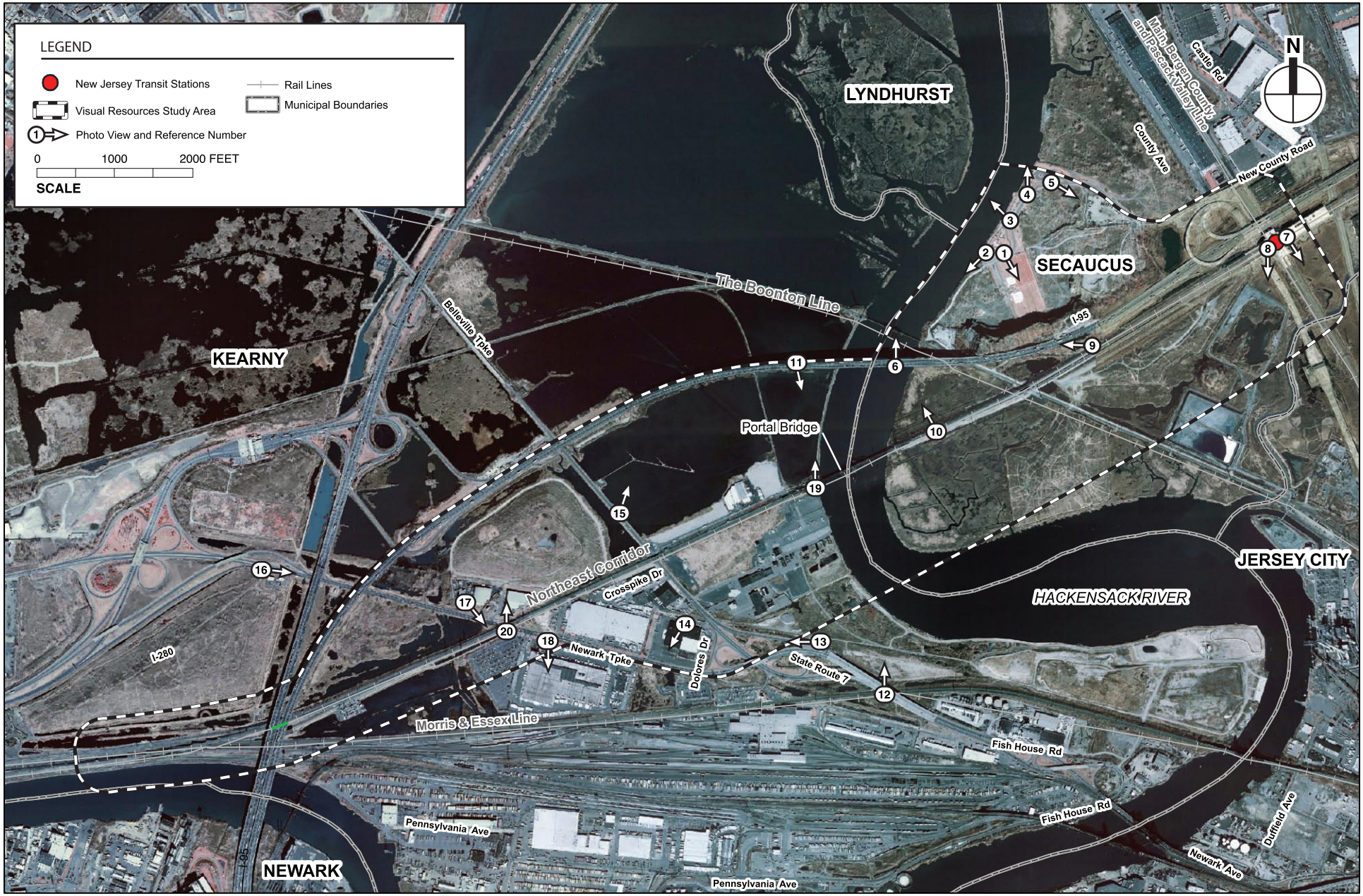

NJ TRANSIT
PORTAL BRIDGE CAPACITY
ENHANCEMENT PROJECT

Visual Resources Study Area

Figure 5.3-1

B. EXISTING CONDITIONS

EXISTING VISUAL CHARACTER

The study area contains Amtrak's existing Northeast Corridor, a two-track rail line oriented northeast-southwest in the study area; it is on an embankment in the study area, with the exception of the eastern section in Secaucus, which runs on a viaduct. Also located within the study area are portions of the Hackensack River and associated wetlands; vacant or undeveloped uplands; rail and vehicular transportation routes; and industrial uses. There are no residential areas in the study area, and there is one public park.

Associated with the Northeast Corridor within the study area is the Portal Bridge, a two-track, moveable swing-span rail bridge over the Hackensack River (see Figure 5.3-2). The existing Portal Bridge has a vertical clearance of 23 feet above mean-high-water (MHW) and its highest point is approximately 70 feet above MHW. The Secaucus Transfer Station, a modern domed rail station in Secaucus, is located in the eastern portion of the study area (see Figure 5.3-2). Several rail lines (the Main/Bergen County and Pascack Valley Lines, and the Boonton Line) also transect the study area.

In the study area is the eastern spur of the New Jersey Turnpike (I-95), which crosses the Hackensack River just north of the Portal Bridge. The DB Swing Bridge, carrying the Boonton Line over the Hackensack River, is also located in the study area, just north of and roughly paralleling the New Jersey Turnpike Bridge. An elevated portion of the New Jersey Turnpike passes through the study area. The segment of the highway located in the vicinity is located between Interchanges 15E and 15W, where the New Jersey Turnpike divides itself into the eastern and western spurs. At the point of division, in Kearny, the New Jersey Turnpike passes over the Northeast Corridor at the western end of the study area. The eastern spur of the New Jersey Turnpike parallels the eastern portion of the portion of the study area in Secaucus. The Newark Turnpike, I-280, and the Belleville Turnpike also transect the study area in Kearny. The Belleville and Newark Turnpikes in the vicinity are two-lane roadways edged with low barriers of either concrete or metal.

Several industrial and formerly industrial properties are located within the study area. Between the Belleville Turnpike and the Hackensack River, south of the Northeast Corridor, are the Standard Chlorine and Diamond Shamrock sites and a portion of the Koppers Coke site; all these are former industrial facilities no longer in active use. The Standard Chlorine site contains multiple vacant industrial buildings of varying heights and condition, largely constructed in the early to mid-20th century. Between the Belleville Turnpike and the Hackensack River, north of the Northeast Corridor, is the Jana Corporation's property on which the Royale Linens company operates, an active industrial site containing one large low utilitarian structure.

PSEG, a regional utility provider, maintains a fly ash disposal area on the property immediately south of Malanka Landfill. PSEG's Hudson Generating Station, a large industrial facility including several large smokestacks, is also located nearby, immediately south of the study area. In Kearny, two former landfills are located to the north of the existing Northeast Corridor—the 161-acre 1-D Landfill and the 54-acre 1-A Landfill—both of which were closed in the 1980s and are under the jurisdiction of New Jersey Meadowlands Commission (NJMC). Both of these landfills appear as relatively tall grassy mounds. Between the New Jersey Turnpike and the Belleville Turnpike is a mix of light industrial and warehouse uses, a U.S. Postal Service bulk mail facility (a large three-story concrete structure), and an associated parking lot. South of the

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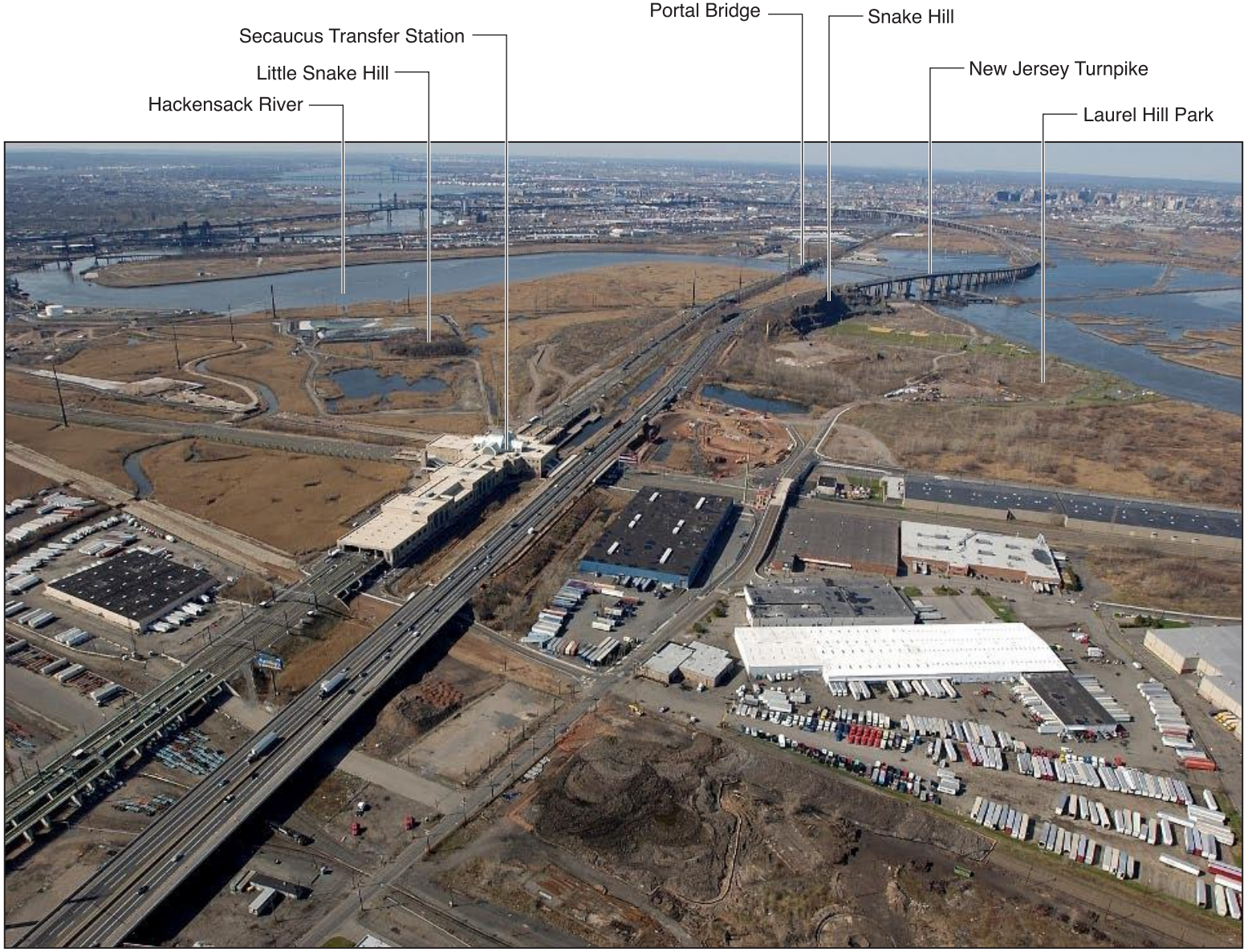


Source: Michael Rosenthal, NJ Transit

NJ TRANSIT
PORTAL BRIDGE CAPACITY
ENHANCEMENT PROJECT

General View of Study Area, Looking West from Secaucus

Figure 5.3-2

U.S. Postal Service facility are a NJ TRANSIT maintenance facility and the Kearny Intermodal Yard, a 120-acre yard owned by Conrail Shared Assets.

Hudson County Park at Laurel Hill (Laurel Hill Park) fronts the eastern shore of the Hackensack River in Secaucus, in the northeast portion of the study area (see Figure 5.3-2). Laurel Hill Park, completed in 1997, is a 46-acre county park located within a larger 104-acre county-owned parcel on the east bank of the Hackensack River. The park supports both passive and active uses. It contains a playground with play equipment; a public boat launch and dock; a riverfront promenade with scenic overlooks; picnic areas; nature trails; wooded areas; and soccer and softball fields. Located largely in Laurel Hill Park is Snake Hill, a large igneous rock intrusion, covering over 12 acres and rising more than 150 feet tall. The rocky hill is partly wooded, and is shaped like a long, fairly narrow ridge, oriented east-west. The north side of the feature has a tiered appearance, a vestige of former quarrying and blasting activities. The New Jersey Turnpike has been constructed along and partly atop the southern side of this feature.

Little Snake Hill, a round and steep rocky outcropping largely covered with trees, is also located in the southeastern portion of the study area.

The Riverbend Wetland Preserve is located within the study area in Secaucus and is part of Laurel Hill Park. This protected wetland area is not currently accessible by the public. It is characterized chiefly by undeveloped low-lying marshes, contains a dirt roadway, and is transected by the Northeast Corridor. The former Malanka Landfill, appearing as a grassy mound, is located to the east of the Riverbend Wetland Preserve and to the south of the Northeast Corridor.

VISUALLY SENSITIVE RESOURCES

FHWA's *Guidance Material on the Preparation of Visual Impact Assessments* defines visual resources as those physical features that make up the visible landscape, including land, water, vegetation, and man-made elements to which viewers attach visual value. Visual resources may include historic buildings, open spaces such as parks and landscaped plazas, and views to natural resources such as water features and natural vegetation.

Multiple visually sensitive resources have been identified within the study area. These include:

- The Hackensack River View Corridor: an open, roughly linear view shed centering on the Hackensack River in the study area, including the wetlands that immediately surround the Hackensack River, and the Hackensack River bridges of the study area and vicinity (see Figure 5.3-2). The wetlands surrounding the Hackensack are tidal, and include areas of open water or mud flats, as well as areas with dense growth of *Phragmites* and other wetland plants. Bridges crossing the Hackensack River that are substantially visible from the study area include the Portal Bridge, the New Jersey Turnpike Bridge, and the DB Swing Bridge (the Boonton Line) to the north; and the Lower Hack Bridge (Morris & Essex Lines), the Wittpenn Bridge (Route 7), and the PATH Bridge, to the south. Some of the bridges in the vicinity are also historic resources, including the Portal Bridge (listed on the State Register of Historic Places [SR]), the Lower Hack Bridge, the Wittpenn Bridge, and the PATH Bridge (part of the S/NR-eligible Hackensack River Lift Bridges Historic District). These historic bridges were constructed during the first three decades of the 20th century and are considered both historically and technologically significant (see Chapter 5.2, "Historic Resources").

- Snake Hill: described earlier, located within the northeastern portion of the study area in Secaucus (see Figure 5.3-2).
- Little Snake Hill: described earlier, located south of the Northeast Corridor in Secaucus (see Figure 5.3-2).

VIEWER GROUPS AND VIEW DURATIONS

Viewer groups in the area consist of motorists, rail passengers, boaters, and pedestrians. Also, in terms of visual resources, viewer groups may be divided into two categories: those that have views of visual resources and those that have views from visual resources or visually sensitive locations. Within the study area there are two visual resources. As discussed above, these include the Hackensack River View Corridor and Snake Hill.

PEDESTRIANS

Pedestrian traffic within the study area is limited due to the fact that most of the study area is not accessible to the public, with the exception of vehicular or rail corridors.

Among the few locations in the study area that offers foot-access and recreation to the general public is Laurel Hill Park, in Secaucus. From most locations within Laurel Hill Park, relatively clear and unobstructed views of Snake Hill are available (see Figure 5.3-1 and Figure 5.3-3, Photo 1). Little Snake Hill is not visible from most vantage points within Laurel Hill Park, because it is blocked by Snake Hill. Particularly from the waterfront portions of Laurel Hill Park, such as the public boat launch area and the grassy areas along the shoreline, relatively long and unobstructed views along the Hackensack River Corridor area afforded. Views from these locations looking south towards the Northeast Corridor include the Hackensack River and associated wetlands, the DB Swing Bridge and the New Jersey Turnpike Bridge behind it (see Figure 5.3-1 and Figure 5.3-3, Photo 2). From fewer locations, such as the boat launch dock, the Portal Bridge can be seen in the distance. Views immediately west from the shoreline of Laurel Hill Park include the Hackensack River and marshes, with distant views of uplands in Kearny (see Figure 5.3-1 and Figure 5.3-4, Photo 3). Views to the north from shoreline locations within Laurel Hill Park include the Hackensack River and associated wetlands, and the Upper Hack Bridge, located outside of the study area (see Figure 5.3-1 and Figure 5.3-4, Photo 4). From Laurel Hill Park, few long views to the east are afforded, due to intervening trees and vegetation; from certain vantage points, such as the parking lot near the boat launch, the Secaucus Transfer Station is visible in the distance (see Figure 5.3-1 and Figure 5.3-5, Photo 5). The only other location in the study area that accommodates substantial foot traffic is the Secaucus Transfer Station, views to and from which were described in the previous section.

The only other location within the study area that accommodates substantial foot traffic is the Secaucus Transfer Station, where views are afforded, particularly to the south and southwest, from large windows in the mezzanines and waiting areas. From the Secaucus Transfer Station looking south, dominant views are of the railroad tracks carrying the Main/Bergen County and Pascack Valley Lines, and the meadows and shrubs that surround those tracks (see Figure 5.3-1 and Figure 5.3-6, Photo 7). The smokestacks and industrial structures of PSEG's Hudson Generating Station (a large industrial facility immediately south of the study area) are also visible, and the skyline of Jersey City can also be seen at a distance on the horizon. Looking southwest, Little Snake Hill can be seen clearly, and the Hackensack River View Corridor is partially visible (see Figure 5.3-1 and Figure 5.3-6, Photo 8). Portions of the corridor that can be seen include the wetlands that surround the Hackensack River, as well as distant views of the

From the playground in Laurel Hill Park, looking south towards ball fields and Snake Hill **1**

Looking southwest from the shoreline in Laurel Hill Park, a view along the Hackensack River View Corridor. The New Jersey Turnpike Bridge and the DB Swing Bridge are clearly visible. The Portal Bridge is largely obscured, however, the Pulaski Skyway can be seen distantly in the background **2**

Looking west from the shoreline in Laurel Hill Park, a view of the Hackensack River and surrounding marshes **3**

A view looking north from the boat launch dock in Laurel Hill Park along the Hackensack River View Corridor. The Upper Hack Bridge is clearly visible (left) **4**

From the parking lot in the northwestern portion of Laurel Hill Park, a view looking southwest. Views are largely obscured by vegetation, however, the Secaucus Transfer Station is visible (center) **5**

A view from the New Jersey Turnpike Bridge over the Hackensack River, looking north. Wide views along the Hackensack River View Corridor are afforded; the DB Swing Bridge, at a lower elevation, can not be seen; however, the Upper Hack Bridge is visible in the distance **6**

Looking south from within the Secaucus Transfer Station, a view of the Main Line railroad. Also visible are the New Jersey Turnpike's Secaucus Interchange (center), and the smokestacks of the PSEG facility. The Jersey City skyline (left) and the Hackensack River bridges south of Portal Bridge (right) are seen distantly **7**

Looking southwest from within the Secaucus Transfer Station, limited views of the Hackensack River wetlands and the Hackensack River bridges south of Portal Bridge are afforded. Little Snake Hill is visible on the right **8**

Hackensack River bridges located south of Portal Bridge. Clear views of Snake Hill are not afforded from the Secaucus Transfer Station.

MOTORISTS

There are numerous motorists traveling on multiple roadways that pass through the study area. These roadways include the New Jersey Turnpike, the Belleville Turnpike, and the Newark Turnpike.

From the New Jersey Turnpike, and from the bridge that carries the New Jersey Turnpike's eastern spur over the Hackensack River, long clear views along the Hackensack River View Corridor are afforded, to both the north and south. The river itself and the surrounding wetlands are visible to both the north and south of the New Jersey Turnpike Bridge**.** To the north, the DB Swing Bridge is not clearly visible due to its lower elevation; however, the Upper Hack Bridge, outside of the study area, is visible in the distance (see Figure 5.3-1 and Figure 5.3-5, Photo 6). Looking northeast from the New Jersey Turnpike and the New Jersey Turnpike Bridge, Snake Hill is clearly visible (see Figure 5.3-1 and Figure 5.3-7, Photo 9). Looking south, Little Snake Hill can be discerned from some vantage points along the New Jersey Turnpike, particularly from the eastbound New Jersey Turnpike Bridge and from the Secaucus portion of the Turnpike in the study area. Looking south from the New Jersey Turnpike Bridge, views along the Hackensack River View Corridor include limited views of the Portal Bridge (at a lower elevation), the three bridges immediately south of it, and the Pulaski Skyway in the distance (see Figure 5.3-1 and Figure 5.3-8, Photo 11). The 1-A Landfill and the former industrial properties along the Kearny shoreline can be seen, including vacant uplands and abandoned industrial buildings. The skylines of Newark and Jersey City are also distantly visible.

Despite the proximity of the Belleville Turnpike to the Hackensack River, views along the Hackensack River View Corridor are limited from the Belleville Turnpike in the study area, due primarily to the density of development (or number and size of buildings per acre) as well as vegetation, including *Phragmites* and small trees, located along the Hackensack River wetlands on the east side of the Belleville Turnpike. The longest views from the Belleville Turnpike are located just south of the study area, where views of the Hackensack River View Corridor, including the Portal Bridge and New Jersey Turnpike Bridge, are relatively clear (see Figure 5.3-1 and Figure 5.3-8, Photo 12). Further north, within the study area, views along the roadway typically include either vegetation along the roadside or the industrial facilities at either side of the road (see Figure 5.3-1 and Figure 5.3-9, Photos 13 and 14). Views are also blocked on the west by the 54-acre 1-A Landfill, located between the New Jersey Turnpike's eastern spur and the Northeast Corridor, the Belleville Turnpike, and the Newark Turnpike. Looking east from the Belleville Turnpike in this northern portion of the study area, limited views along the Hackensack River Corridor are afforded, though partially obscured by *Phragmites* and other vegetation (see Figure 5.3-1 and Figure 5.3-10, Photo 15).

Views from the Newark Turnpike in the study area are dominated by the industrial facilities and landfills located along the roadway, as well as by surrounding transportation infrastructure (see Figure 5.3-1 and Figure 5.3-10, Photo 16). While limited views of wetlands associated with the Hackensack River are afforded at a few points along the roadway (such as the view looking south between the Northeast Corridor and the New Jersey Turnpike's eastern spur), these wetlands are disconnected from the larger Hackensack River View Corridor by the intervening roadways and industrial facilities (see Figure 5.3-1 and Figure 5.3-11, Photo 17). The "1-A" Landfill blocks views along the Newark Turnpike looking northeast; and the 1-D Landfill,

From the New Jersey Turnpike's eastern spur, just east of where it crosses the Hackensack River, a close-range view of Snake Hill **9**

A view from the Northeast Corridor near the eastern end of Portal Bridge, looking north along the Hackensack River View Corridor. The New Jersey Turnpike dominates the view; the DB Swing Bridge can also been (right) **10**

A view from the New Jersey Turnpike Bridge over the Hackensack River, looking southeast. The Pulaski Skyway is visible in the distance **11**

From the Belleville Turnpike, a short distance south of the study area, looking north. The Morris & Essex Railroad is visible in the foreground. In the background are the Hackensack River and the Portal Bridge (center), with the taller New Jersey Turnpike Bridge beyond it. Snake Hill is visible on the right; vacant uplands and marshes are visible on the right, as are vacant industrial buildings on the Standard Chlorine Chemical Company property **12**

From the Belleville Turnpike near the intersection of the Newark Turnpike, looking northwest. Views are largely obscured by vegetation **13**

Looking southwest from the Belleville Turnpike between the Newark Turnpike and the Northeast Corridor. Views are dominated by industrial properties and transportation infrastructure **14**

Looking northeast from the Belleville Turnpike just north of the Northeast Corridor. Views, substantially obscured by phragmites, include the Hackensack River and the New Jersey Turnpike Bridge **15**

A view along the Newark Turnpike just west of the study area, looking east. The New Jersey Turnpike's western and eastern spurs are visible **16**

From the Newark Turnpike near the Northeast Corridor, looking south towards a small patch of wetland, and the Northeast Corridor beyond it **17**

From the Newark Turnpike near the Northeast Corridor, looking south towards the large U.S. Postal Service facility **18**

A view from the Northeast Corridor near the western end of Portal Bridge, looking north along the Hackensack River View Corridor to wetlands, former railroad tracks, and the New Jersey Turnpike Bridge **19**

A view from the Northeast Corridor near the Newark Turnpike in Kearny, a view looking north towards the “1-A” Landfill **20**

located just north of the western end of the study area, prevents long views looking west from the Newark Turnpike. Large industrial and commercial facilities dominate views along the roadway (see Figure 5.3-1 and Figure 5.3-11, Photo 18). None of the identified visual resources, therefore, enjoys notable visibility from the Newark Turnpike.

RAIL PASSENGERS

Rail passengers along the following lines could have views to the study area: Amtrak's Northeast Corridor, NJ TRANSIT's Northeast Corridor Line, North Jersey Coast Line, Morris & Essex Line, and the Main/Bergen County and Pascack Valley Lines.

From the Main/Bergen County and Pascack Valley Lines within the study area, limited views of marshy areas are afforded to the east, immediately south of the Northeast Corridor. Views from the Main/Bergen County and Pascack Valley Lines looking west from the area north of the Northeast Corridor include limited views of Snake Hill and the wetlands surrounding the Hackensack River. Views from the Main/Bergen County and Pascack Valley Lines looking west from the area south of the Northeast Corridor include clear views of Little Snake Hill and the wetlands located within the Riverbend Wetland Preserve.

Views from the small portion of the Morris & Essex Lines located within the study area are substantially blocked to the north by the 1-D Landfill, located just north of the railroad. Although the Passaic River is located a short distance south of the Morris & Essex Lines in the study area, views of the river are limited by the rail infrastructure that surrounds the line.

From the Northeast Corridor, including the Portal Bridge and the railroad on either side of it within the study area, long clear views along the Hackensack River View Corridor are afforded, to both the north and south. The New Jersey Turnpike Bridge across the Hackensack River is, at its highest point, approximately 130 feet above MHW and dominates views to the north. It partly blocks views beyond it, though the DB Swing Bridge, beyond the New Jersey Turnpike Bridge and at a lower elevation, can be discerned (see Figures 5.3-1, 5.3-4, and 5.3-5, Photos 10 and 19). The Upper Hack Bridge, outside of the study area, is distantly visible beyond the Turnpike Bridge from some vantage points. Looking north from the Northeast Corridor in Kearny from points west of the Belleville Turnpike, views are largely blocked by Landfills 1-A and 1-D (see Figure 5.3-1 and Figure 5.3-12, Photo 20). Looking north from the Northeast Corridor towards Secaucus, Snake Hill is plainly visible from most vantage points, although the New Jersey Turnpike intervenes. Looking south, Little Snake Hill**,** another steep rocky hill, slightly smaller and lower than Snake Hill, can also be clearly seen, particularly in Secaucus between the Boonton Line and the Secaucus Transfer Station.

BOATERS

Viewer groups that would have views from the Hackensack River and surrounding wetlands within the study area consist primarily of boaters in kayaks and small craft utilizing this portion of the Hackensack River. Hudson County's only free public boat launch is located in Laurel Hill Park. Furthermore, the Hackensack Riverkeeper (a nonprofit advocacy group whose mission is to protect and defend the natural living resources that are home to the Hackensack River) maintains a paddling and boating center within Laurel Hill Park that provides seasonal weekend canoe and kayak rentals. While boaters constitute a viewer group that is seasonal and relatively few in number, views from the Hackensack River to visual resources, such as the Hackensack River View Corridor and Snake Hill, are generally clear and unobstructed, and likely represent an important component of that viewer group's experience.

C. NO ACTION ALTERNATIVE

Chapter 3, "Project Alternatives" describes several regional transportation projects that are expected to be completed by 2030 but would not be likely to change the visual characteristics of the study area. In addition, Chapter 5.1, "Land Use and Social Conditions," describes several planned projects likely to be completed by 2030. Some of the projects discussed below are speculative; and many of them are in preliminary planning stages. In most cases, therefore, it is not possible to determine if these planned projects would affect visual resources in the study area.

Several of the land use goals outlined in NJMC's 2004 Land Use Plan could be implemented by the year 2030. This plan seeks to encourage certain types of uses or development for certain portions of the study area and vicinity, including transportation and industrial development, resort recreation development; environmental conservation, etc. NJMC's Land Use Plan identifies a portion of the APE in Kearny as within the area planned for intermodal or industrial uses. The potential affects to visual resources were such redevelopment of the site to occur cannot be determined at this time.

The Secaucus Transit Village, located in the northeastern corner of the study area, is a planned mixed-use development focusing on the Secaucus Transfer Station, which was opened in 2003. If built in its entirety, the phased development plan would result in 1,850 residential units, 750,000 square feet of retail and office space, a 500-room hotel, a linear park and restricted parking for residents of the village. The first phase of development of the Secaucus Transit Village is already under construction in the parcel of land immediately east of Laurel Hill Park. The rest of the area slated for this planned development is currently occupied by industrial uses. For the purposes of this analysis, it is assumed the Secaucus Transit Village will be complete by the project's analysis year. Though the first phase of the development will not substantially affect visual resources in the study area, later phases of the Secaucus Transit Village project are still in preliminary planning stages, and potential impacts of these aspects of the project on visual resources in the APE cannot yet be determined. However, the creation of the Secaucus Transit Village, if built to completion, would create new public spaces from which views of the study area and APE would be afforded.

Under the 2007 Hudson County Park Master Plan, Laurel Hill Park, located partly within the APE in Secaucus, is slated for expansion through the recently-acquired parcel of land directly south of Laurel Hill Park and south of the New Jersey Turnpike. Under the same Master Plan, the existing park property will be expanded to include the construction of two new soccer fields, two new basketball courts, a synthetic turf sports facility, and a cricket facility. There is no official completion date for the Laurel Hill Park improvements and expansion. The Laurel Hill Park expansion plans are not anticipated to substantially affect visual resources identified in the study area. However, the creation of the recreation facilities will create new public spaces from which views of the study area could be afforded.

The East Coast Greenway, a planned 3,000-mile long continuous cyclist and pedestrian trail, would stretch from Calais, Maine south to Key West, Florida. There are several potential on- and off-road routes currently proposed for the segment of the East Coast Greenway near the study area. The *New Jersey Transportation Improvement Program (TIP) for Fiscal Years 2007-2010* includes a potential 2.5-mile segment of the project, sponsored by the New Jersey Department of Transportation (NJDOT), to include sidewalks and designated bike lanes on both sides of Belleville Turnpike (Route 7) and from Newark Industrial Line (a freight line that

branches off of the Boonton Line to the north of the Northeast Corridor) to the intersection of Routes 1&9 and Newark Avenue. This segment will cross the Hackensack River via the planned NJDOT Wittpenn Bridge replacement. The routing and timeframe for potential portions of the East Coast Greenway within the study area are unclear. A separate greenway project, the Hackensack River Walk (also known as the Secaucus Greenway), a planned eight-mile waterfront park, would connect three existing public parks: Laurel Hill Park in Secaucus, Lincoln Park in Jersey City, and Bayonne Park in Bayonne. Within the study area, the planned route of the Hackensack River Walk includes a segment parallel to the Boonton Line from the Hackensack River through the PSEG property and toward Lincoln Park in Jersey City. Another segment, leading from Laurel Hill Park to Secaucus Transfer Station, is also planned. It is not anticipated that the creation of these greenways would adversely affect any visual resources in the study area. However, the creation of the greenways would create additional public space from which views of the study area would be afforded.

D. PROBABLE IMPACTS OF BUILD ALTERNATIVES

As discussed in Chapter 3, "Project Alternatives," four feasible build alternatives (Alternatives FE, FS, DE, and DS) have been identified and Alternative DS is the preferred alternative. None of these build alternatives are expected to significantly affect the visual character of the study area or to substantially alter views to and from visual resources identified in the study area for reasons described below. The project would result in the removal of Portal Bridge and its replacement with two new bridges of slightly larger size and greater height, as well as multiple alterations to the Northeast Corridor, some of which would involve changes to its height, alignment, and appearance. However, changes in alignment and height would be moderate, and would not substantially block or alter important views to and from visual resources in the study area. Furthermore, because the project would replace existing rail infrastructure with new rail infrastructure, the overall visual character, atmosphere, and use of the study area would remain largely the same. Therefore, the project is not expected to substantially affect the visual character of the study area nor block important views to and from visual resources.

As discussed above, pedestrian traffic within the study area is limited, since the majority of the study area is not accessible to public foot-traffic. Among the few pedestrian-accessible locations within the study area at the present time are Laurel Hill Park and the Secaucus Transfer Station. The Hackensack River View Corridor, which is also visible from Laurel Hill Park, would be slightly altered by the replacement of the Portal Bridge, however, the change in view from the park would be very minor because Portal Bridge can only be seen from limited and distanced vantage points within Laurel Hill Park. Therefore, the replacement of Portal Bridge with two new bridges is not expected to cause substantial changes to the overall visual character of the Hackensack River View Corridor from Laurel Hill Park. Although the proposed bridges that would replace Portal Bridge would be slightly larger and higher than the existing Portal Bridge, no important views would be blocked by the new construction. Snake Hill can be seen clearly from many vantage points in Laurel Hill Park. These views would not be obstructed or otherwise affected by the proposed project. From the Secaucus Transfer Station, the Hackensack River View Corridor is partially visible and Little Snake Hill can be seen to the southwest. The proposed project is not anticipated to substantially alter views of the Hackensack River Corridor. The Portal Bridge cannot be clearly seen from the location at the present time, nor are the proposed replacement bridges expected to be prominently visible. Furthermore, the proposed project is not expected to block existing views from the Secaucus Transfer Station to Little

Snake Hill, since, as seen from the Transfer Station, the new bridges would be located beyond Little Snake Hill.

As described above under the No Action Alternative, new public pedestrian-accessible spaces may be created by the project's build year of 2030. As discussed above, the Secaucus Transit Village, if built in its entirety, would result in residential units, retail and office space, a hotel, and a linear park in Secaucus. While detailed plans for these aspects of the Secaucus Transit Village are not yet available, the location of the development would be in the vicinity of the Secaucus Transfer Station, east of proposed project construction. From this location, it is likely that Snake Hill, Little Snake Hill, and the Hackensack River View Corridor would be visible from portions of the Secaucus Transit Village. Due to the relative locations of the Secaucus Transit Village site and proposed project elements, views from Secaucus Transit Village to Snake Hill and Little Snake Hill would not be blocked by the proposed project. Furthermore, while the Hackensack River View Corridor would be altered somewhat by the replacement of the Portal Bridge with two new bridges, the replacement of existing rail infrastructure with new rail infrastructure would not result in a substantial change to the overall character of the view.

Also under the No Action Alternative, under the 2007 Hudson County Park Master Plan, Laurel Hill Park would be expanded to include the construction of two new soccer fields, two new basketball courts, a synthetic turf sports facility, and a cricket facility. Views from this expanded parkland to visual resources in the study area would likely include views of Snake Hill and views of the Hackensack River View Corridor. The proposed Portal Bridge Capacity Enhancement Project would not block views from the expanded parkland to Snake Hill, because the expanded parkland would be a short distance north of Snake Hill, while the proposed project elements would be located south of Snake Hill. Furthermore, while the Hackensack River View Corridor may be somewhat altered by the removal of Portal Bridge and new construction proposed in the project alternatives, the overall change in visual character of this visual resource from the potential Laurel Hill Park expansion area would be minor, since it would entail the replacement of existing rail infrastructure with new rail infrastructure.

Preliminary planning is also underway for the creation of a segment of the East Coast Greenway: several potential on- and off-road routes would be located in or near the study area. The Hackensack River Walk, another planned pedestrian greenway, would also transect the study area, as discussed above. It is likely that the Hackensack River View Corridor, Snake Hill, and Little Snake Hill would be visible from portions of any of the proposed routes of the East Coast Greenway and Hackensack River Walk. The project is not expected to substantially block existing views of Snake Hill or Little Snake Hill from any of the proposed routes for the greenways. Although the project would alter the Hackensack River View Corridor somewhat, the overall change in visual character and context is expected to be minimal, because the project would replace existing railroad structures with new railroad structures. There would be no change in use and minimal change in visual character as a result of the proposed project.

The majority of locations in the study area from which views are currently available are the roadways and rail corridors that transect the study area. The views to visual resources that motorists and rail passengers traveling on the transportation routes experience are generally of short duration, due to the relatively high speeds at which they tend to travel through the study area. From the New Jersey Turnpike and the bridge that carries its eastern spur over the Hackensack River, the Hackensack River View Corridor is clearly visible both to the north and south, and Snake Hill and Little Snake Hill can also be seen for brief periods. The removal of the Portal Bridge is not expected to cause a substantial change in the visual character of the

Hackensack River View Corridor from the New Jersey Turnpike, because Portal Bridge is at a lower elevation than the New Jersey Turnpike Bridge, and therefore is not prominently visible from the New Jersey Turnpike. (As stated above, the existing Portal Bridge is approximately 70 feet above MHW at its highest point and the New Jersey Turnpike Bridge is roughly 130 feet above MHW at its highest point). The new bridges that would be built as part of the proposed project would be higher in elevation than the Portal Bridge. The northern fixed bridge would be approximately 115 feet above MHW at its highest point. The southern moveable bridge would be about 110 feet above MHW in the closed position and 115 feet above MHW in the open position. Both of the proposed bridges would still be lower than the New Jersey Turnpike Bridge. Therefore, while they would be visible, they would not be expected to dominate views, nor to substantially block views to other aspects of the Hackensack River View Corridor, Snake Hill, or Little Snake Hill. Furthermore, as described in Chapter 5.2, "Historic Resources," the design of the new bridge would be undertaken in coordination with the New Jersey Historic Preservation Office (NJHPO) and an effort would be made to incorporate historically compatible designs. This process would further minimize any visual changes or intrusions along the Hackensack River View Corridor.

None of the build alternatives are expected to substantially alter important views from the Belleville Turnpike or the Newark Turnpike. Views to visual resources from these roadways are currently limited to brief glimpses of the Hackensack River View Corridor from a small number of vantage points. These views are not expected to be dramatically altered, since the Hackensack River View Corridor would be only minimally changed by the proposed project, particularly as seen from a distance. Under Alternatives FE and FS, the fly-over would result in a structure roughly 30 feet higher than the existing top of rail in the area between roughly the Belleville Turnpike and Newark Turnpike. However, neither this structure nor the duck-under structure proposed for the area under Alternatives DE and DS are expected to block important views or substantially alter the visual character of the area.

Rail passengers traveling on the Northeast Corridor would be expected to have similar views on the proposed new bridges to those presently accessible from the Portal Bridge and Northeast Corridor. Views from the rail and the new bridges to Snake Hill and Little Snake Hill are expected to remain largely the same. Views of the Hackensack River Corridor would be altered only by the introduction of an additional bridge (when looking north from the proposed southern bridge, or looking south from the proposed northern bridge). While this would alter the Hackensack River View Corridor somewhat, the change is not considered substantial, since the project would replace existing rail infrastructure with new rail infrastructure, and therefore, the change in use and overall visual character would not be substantially altered.

In summary, the proposed project is not expected to substantially alter the visual character of the study area or to block important views to or from the study area. Therefore, the project would not result in significant adverse impacts on visual character and visual resources in the study area. ✷

A. INTRODUCTION AND METHODOLOGY

This chapter assesses the potential long-term impacts on ambient air quality due to operation of the project alternatives. Potential short-term air quality impacts from construction of the project alternatives are discussed in Chapter 6, "Construction Impacts."

The project build alternatives would provide additional capacity for Amtrak and NJ TRANSIT trains to cross the Hackensack River and generally lead to improved operations along the Northeast Corridor from Swift Interlocking to Secaucus Transfer Station. These improvements in service and reliability would lead to potential increases in ridership which would, in turn, beneficially affect both regional and local air quality. The Portal Bridge project wouldn't lead to an increased number of trains into NYC during the peak hour. Therefore, the project's effects on air quality would not be measurable and subsequently no detailed analysis is presented in this chapter. Potential air quality effects of the Portal Bridge project in concert with the service increases proposed by the Access to the Region's Core (ARC) project are discussed in Chapter 7, "Secondary and Cumulative Effects."

This chapter discusses the regulatory context for air quality analysis and includes a description of the methodology used in the cumulative effects analysis. This chapter also presents a discussion of the existing air quality conditions in the study area, as well as in the vicinity of New York Pennsylvania Station (PSNY) in Manhattan.

POLLUTANTS FOR ANALYSIS

Ambient air quality is affected by air pollutants produced by motor vehicles and stationary sources. Emissions from motor vehicles are referred to as mobile source emissions, while emissions from fixed facilities are referred to as stationary source emissions. Ambient concentrations of carbon monoxide (CO) are predominantly influenced by mobile source emissions. Particulate matter (PM), volatile organic compounds (VOCs), and nitrogen oxides (NO and NO_2, collectively referred to as NO_x) are emitted from both mobile and stationary sources. Fine PM is also formed when emissions of NO_x, sulfur oxides (SO_x), ammonia, organic compounds, and other gases react or condense in the atmosphere. Emissions of sulfur dioxide (SO_2) are associated mainly with stationary sources, as well as sources utilizing non-road diesel fuel, such as diesel trains, marine engines, and non-road vehicles (e.g., construction engines). On-road diesel vehicles currently contribute very little to SO_2 emissions since the sulfur content of on-road diesel fuel, which is federally regulated, is extremely low. Ozone is formed in the atmosphere by complex photochemical processes that include NO_x and VOCs, emitted mainly from industrial processes and mobile sources.

CARBON MONOXIDE

CO, a colorless and odorless gas, is produced in the urban environment primarily by the incomplete combustion of gasoline and other fossil fuels. In urban areas, approximately 80 to 90 percent of CO emissions are from motor vehicles. Since CO is a reactive gas, which does not persist in the atmosphere, CO concentrations can vary greatly over relatively short distances; elevated concentrations are usually limited to locations near crowded intersections, heavily traveled and congested roadways, parking lots, and garages. Consequently, CO concentrations must be predicted on a local, or microscale, basis.

NITROGEN OXIDES, VOLATILE ORGANIC COMPOUNDS, AND OZONE

Nitrogen oxides (NO_x) are emitted from both mobile and stationary sources primarily as a result of the combustion of fossil fuels. Volatile organic compounds (VOCs) include a wide range of organic compounds emitted principally from solvents, coatings, petroleum production and distribution, and combustion of fossil fuels. NO_x and VOC emissions are of principal concern because of their role as precursors in the formation of ozone. Ozone is formed through a series of reactions that take place in the atmosphere in the presence of sunlight. Because the reactions are slow and occur as the pollutants are advected downwind, elevated ozone levels are often found many miles from sources of the precursor pollutants. The effects of NO_x and VOC emissions from all sources are, therefore, generally examined on a regional basis.

LEAD

Airborne lead emissions are principally associated with industrial sources and motor vehicles that use gasoline containing lead additives. Most U.S. vehicles produced since 1975, and all produced after 1980, are designed to use unleaded fuel. As these newer vehicles have replaced the older ones, motor vehicle-related lead emissions have decreased. As a result, ambient concentrations of lead have declined significantly. Nationally, the average measured atmospheric lead level in 1985 was only about one quarter the level in 1975. In 1985, the United States Environmental Protection Agency (USEPA) announced new rules that drastically reduced the amount of lead permitted in leaded gasoline. The maximum allowable lead level in leaded gasoline was reduced from the previous limit of 1.1 to 0.5 grams per gallon effective July 1, 1985, and to 0.1 grams per gallon effective January 1, 1986.

RESPIRABLE PARTICULATE MATTER—PM_{10} AND $PM_{2.5}$

PM is a class of air pollutants that includes discrete particles of a range of sizes and chemical compositions, as either liquid droplets (aerosols) or solids suspended in the atmosphere. PM is emitted from a variety of sources (both natural and anthropogenic). Major anthropogenic sources include the combustion of fossil fuels (e.g., vehicular exhaust, power generation, boilers, engines, and home heating); chemical and manufacturing processes, construction and agricultural activities, as well as wood-burning stoves and fireplaces.

PM is regulated in two size categories: particles with an aerodynamic diameter of less than or equal to 2.5 micrometers, or $PM_{2.5}$; and particles with an aerodynamic diameter of less than or equal to 10 micrometers, or PM_{10}, which includes the smaller $PM_{2.5}$. $PM_{2.5}$ has the ability to reach the lower regions of the respiratory tract, delivering with it other compounds that adsorb to the surfaces of the particles; it is also extremely persistent in the atmosphere. Diesel-powered vehicles are a significant source of respirable PM, most of which is $PM_{2.5,}$ PM concentrations

may, consequently, be locally elevated near roadways with high volumes of heavy diesel powered vehicles.

SULFUR DIOXIDE

SO_2 emissions are primarily associated with the combustion of sulfur-containing fuels: oil and coal. Due to the federal restrictions on the sulfur content in diesel fuel for on-road vehicles, no significant quantities are emitted from vehicular sources. Vehicular sources of SO_2 are not significant and, therefore, an analysis of SO_2 is typically only performed for large stationary sources (e.g., coal-fired power generating facility).

REGULATORY CONTEXT

NATIONAL AND STATE AIR QUALITY STANDARDS

As required by the Clean Air Act, primary and secondary National Ambient Air Quality Standards (NAAQS) have been established for six major air pollutants: CO, NO_2, ozone, respirable PM (both $PM_{2.5}$ and PM_{10}), SO_2, and lead. The primary standards represent levels that are requisite to protect the public health, allowing an adequate margin of safety. The secondary standards are intended to protect the nation's welfare, and account for air pollutant effects on soil, water, visibility, materials, vegetation, and other aspects of the environment. The primary and secondary standards are the same for NO_2, ozone, lead, and PM, and there is no secondary standard for CO. USEPA revised the NAAQS for PM, effective December 18, 2006. The revision included lowering the level of the 24-hour $PM_{2.5}$ standard from the former level of 65 micrograms per cubic meter ($\mu g/m^3$) to 35 $\mu g/m^3$ and retaining the level of the annual standard at 15 $\mu g/m^3$. The PM_{10} 24-hour average standard was retained and the annual average PM_{10} standard was revoked.

The NAAQS are presented in Table 5.4-1. The NAAQS for CO, NO_2, and SO_2 standards have also been adopted as the ambient air quality standards for New Jersey State and New York State, but are defined on a running 12-month basis rather than for calendar years only. New York and New Jersey also have standards for total suspended particulate matter (TSP) and ozone that correspond to federal standards which have since been revoked or replaced. In addition, New York State has standards for settleable particles (dustfall), non-methane hydrocarbons (NMHC), beryllium, fluorides, and hydrogen sulfide (H_2S). EPA has also revised the 8-hour ozone standard, lowering it from 0.08 to 0.075 parts per million (ppm), effective in May 27, 2008.

LOCAL AIR QUALITY REQUIREMENTS

No local air quality impact thresholds have been established for New Jersey and therefore a significant impact would occur if the project would cause a violation of NAAQS, worsen an existing violation, or delay timely attainment of NAAQS.

- In addition to federal and New York State standards described previously, under New York City Environmental Quality Review (CEQR) guidelines, incremental impact criteria, known as *de minimis* criteria, have been established to define the impact significance of estimated incremental increases in CO concentrations. These criteria set the minimum change in CO or $PM_{2.5}$ concentrations that define a significant environmental impact. These criteria have been applied to the cumulative impact analysis presented in Chapter 7, "Secondary and Cumulative Effects."

Table 5.4-1
National Ambient Air Quality Standards (NAAQS)

Pollutant	Primary		Secondary	
	ppm	µg/m^3	ppm	µg/m^3
Carbon Monoxide (CO)				
8-hour Average [1]	9	10,000	None	
1-hour Average [1]	35	40,000		
Lead				
3-month Average	NA	1.5	NA	1.5
Nitrogen Dioxide (NO_2)				
Annual Average	0.053	100	0.053	100
Ozone (O_3)				
8-hour Average [2]	0.075	160	0.075	160
Respirable Particulate Matter (PM_{10})				
Average of 3 Annual Means— revoked, effective December 18, 2006	NA	50	NA	50
24-hour Average [1]	NA	150	NA	150
Fine Respirable Particulate Matter ($PM_{2.5}$)				
Average of 3 Annual Means	NA	15	NA	15
24-hour Average [3,4]	NA	35	NA	35
Sulfur Dioxide (SO_2)				
Annual Arithmetic Mean	0.03	80	NA	NA
Maximum 24-hour Average [1]	0.14	365	NA	NA
Maximum 3-hour Average [1]	NA	NA	0.50	1,300

Notes: ppm—parts per million
µg/m3—micrograms per cubic meter
NA—not applicable
All annual periods refer to calendar year.
PM concentrations (including lead) are in µg/m^3 since ppm is a measure for gas concentrations. Concentrations of all gaseous pollutants are defined in ppm and approximately equivalent concentrations in µg/m^3 are presented.
[1] Not to be exceeded more than once a year.
[2] 3-year average of the annual fourth highest daily maximum 8-hr average concentration. EPA has reduced these standards down from 0.08 ppm, effective May 27, 2008.
[3] Not to be exceeded by the annual 98th percentile when averaged over 3 years.
[4] USEPA has reduced these standards down from 65 µg/m^3, effective December 18, 2006.
Source: 40 C.F.R. Part 50: National Primary and Secondary Ambient Air Quality Standards.

NAAQS ATTAINMENT STATUS AND STATE IMPLEMENTATION PLANS

As amended in 1990, the Clean Air Act (CAA) defines non-attainment areas (NAA) as geographic regions that have been designated as not meeting one or more of the NAAQS. When an area is designated as non-attainment by USEPA, the state is required to develop and implement a State Implementation Plan (SIP), which delineates how a state plans to achieve air quality that meets the NAAQS under the deadlines established by the CAA.

The project area falls within areas that are designated as non-attainment for ozone and $PM_{2.5}$, and maintenance for CO. The New Jersey Department of Environmental Protection (NJDEP) announced a proposal to revise the ozone SIP to demonstrate that its two multi-state 8-hour ozone nonattainment areas (associated with the New York City and Philadelphia metropolitan areas) will attain the 8-hour ozone NAAQS by their mandatory attainment date of June 15, 2010. In 2006, USEPA lowered the NAAQS for 24-hour $PM_{2.5}$ from 65 µg/m^3 to 35 µg/m^3. Each state is required to make recommendations to USEPA for designating nonattainment areas for the 24-

hour standard. If NJDEP recommendations are adopted by USEPA, Hudson County, which is currently designated as an annual $PM_{2.5}$ nonattainment area would also be designated nonattainment for the 24-hour $PM_{2.5}$ standard. Final USEPA designations are expected by December 18, 2008.

GENERAL CONFORMITY

In November 1993, EPA promulgated the General Conformity Regulations to prohibit Federal entities from taking actions that do not conform to the State Implementation Plans(s) (SIPs) for attainment and maintenance of the national ambient air quality standards (NAAQS). Federal actions with FRA as the lead agency are subject to the General Conformity Rule, pursuant to 40 C.F.R. 51.850-51.860. A conformity determination is needed for each pollutant of concern in the non-attainment or maintenance area affected by a federal action. It is assumed that actions resulting in emissions of pollutants of concern less than established (*de minimis*) screening criteria emissions rates would conform to SIPs. Conforming actions would not:

(i) Cause or contribute to any new violation of any standard in any area;

(ii) Interfere with provisions in the applicable SIP for maintenance of any standard;

(iii) Increase the frequency or severity of any existing violation of any standard in any area; or

(iv) Delay timely attainment of any standard or any required interim emission reductions or other milestones in any area.

As an FRA action, the Portal Bridge project must conform to the purpose of State Implementation Plans for ozone, $PM_{2.5}$, and CO to meet and maintain the NAAQS in New Jersey and multi-state nonattainment and maintenance areas. The applicable *de minimis* threshold for each pollutant or its precursor is 100 tons per year with the exception of volatile organic compounds, for which the threshold is 50 tons per year since Hudson County is within an ozone transport zone. The Portal Bridge project would not exceed these *de minimis* thresholds for any criteria pollutant either during construction or operation of the project. By directly and indirectly contributing to an increase in public transportation ridership, the Portal Bridge project would actually result in a net long-term emission decrease in emissions and overall benefits to regional air quality. On a short-term basis, during project construction it is estimated that annual emission burdens of particulate matter and VOC's would be less than one ton per year and emissions of nitrogen oxides (NO_x) would be approximately 15 tons per year.

B. EXISTING CONDITIONS

EXISTING MONITORED AIR QUALITY CONDITIONS

NEW JERSEY

Air quality data were compiled using USEPA AirData databases for 2007, the latest calendar year for which these data are available. The maximum measured short-term concentrations are reported. Representative sites at which these data were monitored within or near the New Jersey portion of the project area are shown in Table 5.4-2.

With the exception of $PM_{2.5}$ and ozone, monitored levels for the criteria pollutants do not exceed National or State ambient air quality standards in the project area.

Table 5.4-2
Most Recent Monitored Ambient Air Quality Data – New Jersey

Pollutant	Location	Averaging Period	Concentration	NAAQS
CO	Jersey City, Hudson County	8-hour	2.1 ppm	9 ppm
		1-hour	3.3 ppm	35 ppm
SO_2	Jersey City, Hudson County	Annual	10 µg/m^3	80 µg/m^3
		24-hour	47 µg/m^3	365 µg/m^3
		3-hour	65 µg/m^3	1,300 µg/m^3
PM_{10}	Jersey City, Hudson County	24-hour	58 µg/m^3	150 µg/m^3
$PM_{2.5}$	Jersey City, Hudson County	Annual	14 µg/m^3	15 µg/m^3
		24-hour[1]	47 µg/m^3	35 µg/m^3
NO_2	Bayonne, Hudson County	Annual	39.5 µg/m^3	100 µg/m^3
Lead	New Brunswick, Middlesex County	3-month[2]	0.12 µg/m^3	1.5 µg/m^3
Ozone	Bayonne, Hudson County	8-hour[3]	0.095 ppm	0.075 ppm

Note:
[1] The most recent monitoring data does not exceed the 2005 standard of 65µg/m^3. However, the concentration does exceed the revised 24-hour $PM_{2.5}$ standard of 35µg/m^3.
[2] Based on 2005 data, the most recent available for the New Brunswick monitoring station.
[3] EPA has reduced this standard down from 0.08 ppm, effective May 27, 2008.
Source: NYSDEC, 2004-2005 New York State Ambient Air Quality Data.

NEW YORK

Data compiled by New York State Department of Environmental Conservation (NYSDEC) are presented for 2005, the most recent calendar year for which data are available. Representative sites at which these data were monitored (within or closest to the project study area) are shown in Table 5.4-3. With the exception of $PM_{2.5}$, monitored levels for the criteria pollutants do not exceed National or State ambient air quality standards in the project area.

Table 5.4-3
Most Recent Monitored Ambient Air Quality Data – New York

Pollutant	Location	Averaging Period	Concentration	NAAQS
CO	PS 59, New York County	8-hour	1.6 ppm	9 ppm
		1-hour	2.3 ppm	35 ppm
SO_2	PS 59, New York County	Annual	29 µg/m^3	80 µg/m^3
		24-hour	110 µg/m^3	365 µg/m^3
		3-hour	178 µg/m^3	1,300 µg/m^3
PM_{10}	JHS 126, King County	24-hour[1]	47 µg/m^3	150 µg/m^3
$PM_{2.5}$	PS 59, New York County	Annual	17 µg/m^3	15 µg/m^3
		24-hour[3]	40.1 µg/m^3	35 µg/m^3
NO_2	PS 59, New York County	Annual	68 µg/m^3	100 µg/m^3
Lead	Susan Wagner, Richmond	3-month	0.01 µg/m^3	1.5 µg/m^3
Ozone	IS 52, The Bronx	8-hour	0.077 ppm	0.08 ppm
		1-hour[2]	0.108 ppm	0.12 ppm

Notes:
[1] Ambient monitoring data are not yet available from NYSDEC for 2005. The latest available value was used instead.
[2] The 1-hour ozone NAAQS has been replaced with the 8-hour standard; however, the maximum monitored concentration is provided for informational purposes.
[3] The most recent monitoring data does not exceed the 2005 standard of 65µg/m^3. However, the concentration does exceed the revised 24-hour $PM_{2.5}$ standard of 35µg/m^3.
Source: NYSDEC, 2004-2005 New York State Ambient Air Quality Data.

C. NO ACTION ALTERNATIVE

Section B of Chapter 3, "Project Alternatives," describes several regional transportation projects that are expected to be completed by 2030. In the future without the proposed project, air quality in the region should continue to improve due to the effect of federally mandated emission

control programs scheduled to be implemented over the next several years. Many of these programs were part of the 1990 Clean Air Act Amendments or are included as part of each state's SIP to meet the NAAQS. These programs cover a wide range of sources, both mobile and stationary, and will affect emissions of NO_x , SO_2, CO, particulate matter, and volatile organic compounds. However, without the proposed project, the transportation problems associated with the existing Portal Bridge will continue to adversely affect rail service along the Northeast Corridor. Without the proposed enhancements to the bridge and its approaches, the potential air quality benefits associated with improved rail service and diversion from automobile traffic would not be maximized.

D. PROBABLE IMPACTS OF THE BUILD ALTERNATIVES

As discussed in Chapter 3, "Project Alternatives," four feasible build alternatives (Alternatives FE, FS, DE, and DS) have been identified and Alternative DS is the preferred alternative. While all of the build alternatives would result in an increase in capacity over the Hackensack River and greatly improve operations between Swift Interlocking and Secaucus Transfer Station, the project would not increase the number of peak hour trains into PSNY. Therefore, the project would not substantially increase the number of new transit riders and would not measurably reduce vehicle-miles-traveled in the region. As a result there would be no measurable effect on air quality due to the proposed build alternatives. While the proposed improvements would lead to an improvement in service along the Northeast Corridor that could increase passenger travel and reduce auto usage in the region, the air quality benefits would be modest. The Portal Bridge project would, however, allow other projects such as the ARC project to increase the number of trains to NYC, thereby providing substantial regional air quality benefits. These benefits and potential local adverse impacts are discussed in detail in Chapter 7, "Secondary and Cumulative Effects." The Portal Bridge project would not exceed the "de minimis" thresholds for any criteria pollutant either during construction or operation and therefore satisfies General Conformity requirements.

✷

A. INTRODUCTION

This chapter assesses the potential for noise and vibration impacts from operation of the Portal Bridge Capacity Enhancement Project. The proposed build alternatives have potential to affect noise and vibration levels adjacent to the right-of-way in two possible ways. First, the project would change the track alignment slightly, potentially increasing noise and vibration levels at nearby locations. Second, the proposed operational improvements would lead to a potential increase in the maximum allowable speed along this section of the Northeast Corridor, which could lead to higher noise and vibration levels. Potential impacts during construction are discussed in Chapter 6, "Construction Impacts." This chapter includes a discussion of the fundamentals of airborne noise, vibration and ground-borne noise impacts, along with the applicable standards, analysis methodologies, and impact criteria for each. Where potential impacts are identified, the feasibility and effectiveness of various mitigation measures are examined.

Airborne noise is what most people think of when they hear the word "noise." It is noise that travels through the air—such as the sound of traffic on a nearby roadway, or children on a playground. Ground-borne noise is the rumbling sound caused by vibration (or oscillatory motion). With ground-borne noise, buildings and other structures act like speakers for low-amplitude noise. This chapter assesses the build alternative's potential to create both types of noise, as well as vibrations.

An analysis of the effects of the project alternatives on noise was conducted following the methodology set forth in FTA's guidance manual, *Transit Noise and Vibration Impact Assessment* (May 2006). This FTA guidance document sets forth methodologies for analyzing noise and vibration from commuter and inter-city rail operations and as such is the standard U.S. Department of Transportation (USDOT) methodology for assessing potential impacts of new and expanded rail transit systems. The analysis conducted and conclusions reached are described in this chapter.

B. NOISE FUNDAMENTALS, STANDARDS, AND IMPACT CRITERIA

AIRBORNE NOISE FUNDAMENTALS

Quantitative information on the effects of airborne noise on people is well documented. If sufficiently loud, noise may adversely affect people in several ways. For example, noise may interfere with human activities, such as sleep, speech communication, and tasks requiring concentration or coordination. It may also cause annoyance, hearing damage, and other physiological problems. Several noise scales and rating methods are used to quantify the effects of noise on people. These scales and methods consider such factors as loudness, duration, time of occurrence, and changes in noise level with time. However, all the stated effects of noise on people are subjective.

Sound pressure levels are measured in units called "decibels" (dB). The particular character of the noise that we hear (a whistle compared with a French horn, for example) is determined by the rate, or "frequency," at which the air pressure fluctuates, or "oscillates." Frequency defines

the oscillation of sound pressure in terms of cycles per second. One cycle per second is known as 1 Hertz (Hz). People can hear over a relatively limited range of sound frequencies, generally between 20 Hz and 20,000 Hz, and the human ear does not perceive all frequencies equally well. High frequencies (the whistle, for example) are more easily discerned and therefore more intrusive than many of the lower frequencies (the lower notes on the French horn, for example).

"A"-Weighted Sound Level (dBA)

To bring a uniform noise measurement that simulates people's perception of loudness and annoyance, the decibel measurement is weighted to account for those frequencies most audible to the human ear. This is known as the A-weighted sound level, or "dBA," and it is the most often used descriptor of noise levels where community noise is the issue. As shown in Table 5.5-1, the threshold of human hearing is defined as 0 dBA; very quiet conditions (as in a library, for example) are approximately 40 dBA; levels between 50 dBA and 70 dBA define the range of acceptable daily activity; levels above 70 dBA would be considered noisy, and then loud, intrusive, and deafening as the scale approaches 130 dBA. For most people to perceive an increase in noise, it must be at least 3 dBA. At 5 dBA, the change will be readily noticeable (Bolt, Beranek and Newman, 1973). An increase of 10 dBA is generally perceived as a doubling of loudness.

Table 5.5-1
Common Noise Levels

Sound Source	(dBA)
Military jet, air raid siren	130
Amplified rock music	110
Jet takeoff at 500 meters	100
Freight train at 30 meters	95
Train horn at 30 meters	90
Heavy truck at 15 meters	
Busy city street, loud shout	80
Busy traffic intersection	
Highway traffic at 15 meters, train	70
Predominantly industrial area	60
Light car traffic at 15 meters, city or commercial areas or residential areas close to industry	
Background noise in an office	50
Suburban areas with medium density transportation	
Public library	40
Soft whisper at 5 meters	30
Threshold of hearing	0

Note: A 10 dBA increase in level appears to double the loudness, and a 10 dBA decrease halves the apparent loudness.
Source: Cowan, James P. Handbook of Environmental Acoustics. Van Nostrand Reinhold, New York, 1994. Egan, M. David, Architectural Acoustics. McGraw-Hill Book Company, 1988.

It is also important to understand that combinations of different sources are not additive in an arithmetic manner, because of the dBA scale's logarithmic nature. For example, two noise sources—a vacuum cleaner operating at approximately 72 dBA and a telephone ringing at approximately 58 dBA—do not combine to create a noise level of 130 dBA, the equivalent of a jet airplane or air raid siren (see Table 5.5-1). In fact, the noise produced by the telephone ringing may be masked by the noise of the vacuum cleaner and not be heard. The logarithmic combination of these two noise sources would yield a noise level of 72.2 dBA.

Effects of Distance on Noise

Noise varies with distance. For example, highway traffic 50 feet away from a receptor (such as a person listening to the noise) typically produces sound levels of approximately 70 dBA. The same highway noise measures 66 dBA at a distance of 100 feet, assuming soft ground conditions. This decrease is known as "drop-off." The outdoor drop-off rate for line sources, such as traffic, is a decrease of approximately 4.5 dBA (for soft ground) for every doubling of distance between the noise source and receptor (for hard ground the outdoor drop-off rate is 3 dBA for line sources). Assuming soft ground, for point sources, such as amplified rock music, the outdoor drop-off rate is a decrease of approximately 7.5 dBA for every doubling of distance between the noise source and receptor (for hard ground the outdoor drop-off rate is 6 dBA for point sources).

Noise Descriptors Used in Impact Assessment

The sound-pressure level unit of dBA describes a noise level at just one moment but since very few noises are constant, other ways of describing noise over more extended periods have been developed. One way of describing fluctuating sound is to describe the fluctuating noise heard over a specific period as if it were a steady, unchanging sound (i.e., as if it were averaged over that time period). For this condition, a descriptor called the "equivalent sound level," L_{eq} can be computed. L_{eq} is the constant sound level that, in a given situation and period (e.g., 1 hour, denoted by $L_{eq(1)}$, or 24 hours, denoted as $L_{eq(24)}$), conveys the same sound energy as the actual time-varying sound.

A descriptor for cumulative 24-hour exposure is the day-night sound level, abbreviated as L_{dn}. This is a 24-hour measure that accounts for the moment-to-moment fluctuations in A-weighted noise levels due to all sound sources during 24 hours, combined. Mathematically, the L_{dn} noise level is the energy average of all $L_{eq(1)}$ noise levels over a 24-hour period, where nighttime noise levels (10 PM to 7 AM) are increased by 10 dBA before averaging.

Following FTA guidance, either the maximum $L_{eq(1)}$ sound level or the L_{dn} sound level is used for impact assessment, depending on land use category as described below.

VIBRATION FUNDAMENTALS

Fixed railway operations have the potential to produce high vibration levels, since railway vehicles contact a rigid steel rail with steel wheels. Train wheels rolling on the steel rails create vibration energy that is transmitted into the track support system. The amount of vibrational energy is strongly dependent on such factors as how smooth the wheels and rails are and the vehicle suspension system. The vibration of the track structure "excites" the adjacent ground, creating vibration waves that propagate through the various soil and rock strata to the foundations of nearby buildings. As the vibration propagates from the foundation through the

remaining building structure, certain resonant, or natural, frequencies of various components of the building may be excited.

The effects of ground-borne vibration may include discernable movement of building floors, rattling of windows, and shaking of items on shelves or hanging on walls. In extreme cases, the vibration can cause damage to buildings. The vibration of floors and walls may cause perceptible vibration, rattling of such items as windows or dishes on shelves. The movement of building surfaces and objects within the building can also result in a low-frequency rumble noise. The rumble is the noise radiated from the motion of the room surfaces, even when the motion itself cannot be felt. This is called ground-borne noise.

Vibrations consist of rapidly fluctuating motions in which there is no "net" movement. When an object vibrates, any point on the object is displaced from its initial "static" position equally in both directions so that the average of all its motion is zero. Any object can vibrate differently in three mutually independent directions: vertical, horizontal, and lateral. It is common to describe vibration levels in terms of velocity, which represents the instantaneous speed at a point on the object that is displaced. In a sense, the human body responds to an average vibration amplitude, which is usually expressed in terms of the root mean square (rms) amplitude.

All vibration levels in this document are referenced to $1x10^{-6}$ inches per second. "VdB" (referenced to $1x10^{-6}$ inches per second) is used for vibration decibels to reduce the potential for confusion with noise decibels.

EFFECT OF PROPAGATION PATH

Vibrations are transmitted from the source to the ground, and propagate through the ground to the receptor. Soil conditions have a strong influence on the levels of ground-borne vibration. Stiff soils, such as some clay and rock, can transmit vibrations over substantial distances. Sandy soils, wetlands, and groundwater tend to absorb movement and thus reduce vibration transmission. Because subsurface conditions vary widely, measurement of actual vibration conditions, or transfer mobility, at the site can be the most practical way to address the variability of propagation conditions.

HUMAN RESPONSE TO VIBRATION LEVELS

Although the perceptibility threshold for ground-borne vibration is about 65 VdB, the typical threshold of human annoyance is 72 VdB. As a comparison, buses and trucks rarely create vibration that exceeds 72 VdB unless there are significant bumps in the road, and these vehicles are operating at moderate speeds. Vibration levels for typical human and structural responses and sources are shown in Table 5.5-2. Background vibration is usually well below the threshold of human perception, and is of concern only when the vibration affects very sensitive manufacturing or research equipment. Electron microscopes, high-resolution lithography equipment, recording studios, and laser and optical benches are typical of equipment that is highly sensitive to vibration.

Table 5.5-2
Typical Levels of Ground-borne Vibration

Human/Structural Response	Velocity Level (VdB)	Typical Sources (at 50 feet)
Threshold, minor cosmetic damage fragile buildings	100	Blasting from construction projects
		Bulldozers and other heavy tracked construction equipment
Difficulty with vibration-sensitive tasks, such as reading a video screen	90	Locomotive powered freight train
Residential annoyance, infrequent events	80	Rapid Transit Rail, upper range
		Commuter Rail, typical range
Residential annoyance, frequent events		Bus or Truck over bump
	70	Rapid Transit Rail, typical range
Limit for vibration-sensitive equipment. Approximate threshold for human perception of vibration		Bus or truck, typical
	60	Typical background vibration
	50	

Source: U.S. Dept of Transportation, FTA, *Transit Noise and Vibration Impact Assessment,* May 2006.

NOISE STANDARDS AND CRITERIA

AIRBORNE NOISE STANDARDS AND CRITERIA

The FTA guidance manual defines noise criteria based on the specific type of land use that would be affected, with explicit operational noise impact criteria for three land use categories. These impact criteria are based on either peak 1-hour L_{eq} or 24-hour L_{dn} values. Table 5.5-3 describes the land use categories defined in the FTA report, and provides noise metrics used for determining operational noise impacts. As described in Table 5.5-3, categories 1 and 3—which include land uses that are noise-sensitive, but where people do not sleep—require examination using the 1-hour L_{eq} descriptor for the noisiest peak hour. Category 2, which includes residences, hospitals, and other locations where nighttime sensitivity to noise is very important, requires examination using the 24-hour L_{dn} descriptor.

Table 5.5-3
FTA's Land Use Category and Metrics for Transit Noise Impact Criteria

Land Use Category	Noise Metric (dBA)	Description of Land Use Category
1	Outdoor $L_{eq(h)}$*	Tracts of land where quiet is an essential element in the intended purpose. This category includes lands set aside for serenity and quiet, and such land uses as outdoor amphitheaters and concert pavilions, as well as National Historic Landmarks with significant outdoor use. Also included are recording studios and concert halls.
2	Outdoor L_{dn}	Residences and buildings where people normally sleep. This category includes homes, hospitals, and hotels, where a nighttime sensitivity to noise is assumed to be of utmost importance.
3	Outdoor $L_{eq(h)}$*	Institutional land uses with primarily daytime and evening use. This category includes schools, libraries, and churches, where it is important to avoid interference with such activities as speech, meditation, and concentration on reading material. Places for study or meditation associated with cemeteries, monuments, museums, campgrounds and recreational facilities can also be considered to be in this category. Certain historical sites and parks are also included.

Note: * L_{eq} for the noisiest hour of transit-related activity during hours of noise sensitivity.
Source: *Transit Noise and Vibration Impact Assessment*, FTA, May 2006.

Figure 5.5-1 shows FTA's noise impact criteria for transit projects. The FTA impact criteria are keyed to the noise level generated by the project (called "project noise exposure") in locations of varying existing noise levels. Two types of impacts—moderate and severe—are defined for each land use category, depending on existing noise levels. Thus, where existing noise levels are 40 dBA, for land use categories 1 and 2, the respective L_{eq} and L_{dn} noise exposure from the project would create moderate impacts if they were above approximately 50 dBA, and would create severe impacts if they were above approximately 55 dBA. For category 3, a project noise exposure level above approximately 55 dBA would be considered a moderate impact, and above approximately 60 dBA would be considered a severe impact. The difference between "severe impact" and "moderate impact" is that a severe impact occurs when a change in noise level occurs that a significant percentage of people would find annoying, while a moderate impact occurs when a change in noise level occurs that is noticeable to most people but not necessarily sufficient to result in strong adverse reactions from the community.

VIBRATION STANDARDS AND CRITERIA

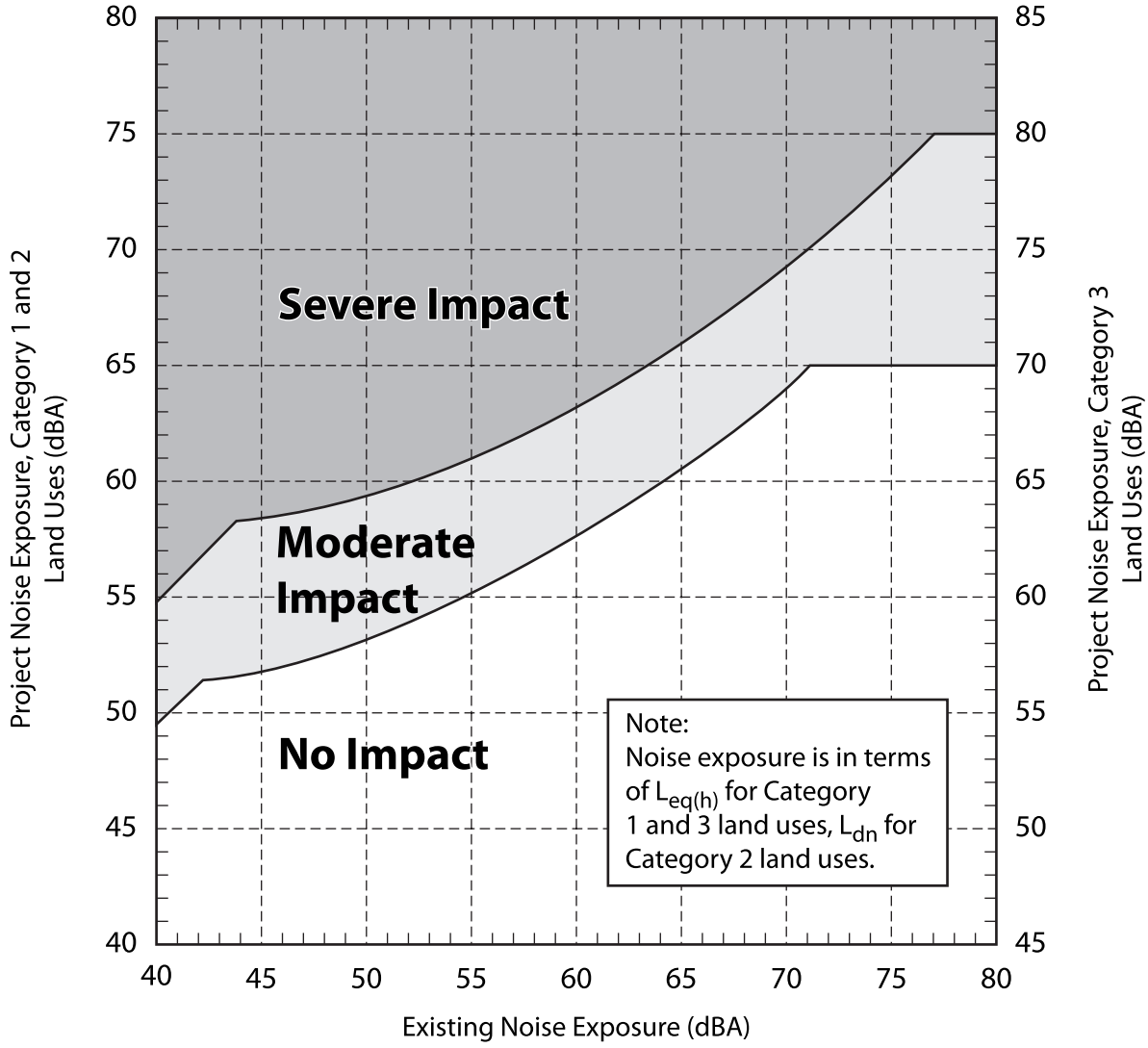
With the construction of new rail rapid transit systems in the past 20 years, considerable experience has been gained about how communities would react to various levels of building vibration. This experience, combined with the available national and international standards, represents a good foundation for predicting annoyance from ground-borne noise and vibration in residential areas. Table 5.5-2 summarizes typical human or structural responses to various levels of vibration.

The FTA criteria for environmental impact from ground-borne vibration and noise are based on the maximum levels for a single event. The impact criteria as defined in the FTA guidance manual are shown in Table 5.5-4. The criteria for acceptable ground-borne vibration are expressed in terms of rms velocity levels in decibels and the criteria for acceptable ground-borne noise are expressed in terms of A-weighted sound level. As shown in the table, the FTA methodology provides three different impact criteria—one for "infrequent" events, when there are fewer than 30 vibration events per day, one for "occasional" events, when there are between 30 and 70 vibration events per day, and one for "frequent" events, when there are more than 70 vibration events per day. It should be noted that these impacts would occur only if a project would cause ground-borne noise or vibration levels that are higher than existing vibration levels. Thus, if the vibration level for a building in Category 1 is already 70 VdB (5 VdB above the 65 VdB threshold listed in Table 5.5-4) but the proposed project would not increase that level, then the proposed project would not be considered to have an impact.

The limits are specified for the three land use categories defined below:

- **Vibration Category 1: High Sensitivity**—Buildings where low ambient vibration is essential for the operations within the building, which may be well below levels associated with human annoyance. Typical land uses are vibration-sensitive research and manufacturing, hospitals, and university research operations.
- **Vibration Category 2: Residential**—This category covers all residential land uses and any buildings where people sleep, such as hotels and hospitals. No differentiation is made between different types of residential areas. This is primarily because ground-borne vibration and noise are experienced indoors and building occupants have practically no means to reduce their exposure. Even in a noisy urban area, the bedrooms often will be quiet in buildings that have effective noise insulation and tightly closed windows. Hence, an occupant of a bedroom in a noisy urban area is likely to be just as sensitive to ground-borne noise and vibration as someone in a quiet suburban area.

7.13.07



Source: Transit Noise and Vibration Impact Assessment, FTA-VA-90-1003-06, May 2006

FTA's Noise Impact Criteria for Transit Projects

Figure 5.5-1

Table 5.5-4
Ground-Borne Vibration (GBV) and Ground-Borne Noise (GBN) Impact Criteria for General Assessment

Land Use Category	GBV Impact Levels (VdB re 1 micro-inch/sec)			GBN Impact Levels (dB re 20 micro Pascals)		
	Frequent Events[1]	Occasional Events[2]	Infrequent Events[3]	Frequent Events[1]	Occasional Events[2]	Infrequent Events[3]
Category 1: Buildings where vibration would interfere with interior operations	65 VdB[4]	65 VdB[4]	65 VdB[4]	N/A[4]	N/A[4]	N/A[4]
Category 2: Residences and buildings where people normally sleep	72 VdB	75 VdB	80 VdB	35 dBA	38 dBA	43 dBA
Category 3: Institutional land uses with primarily daytime use	75 VdB	78 VdB	83 VdB	40 dBA	43 dBA	48 dBA

Notes:
1 "Frequent Events" is defined as more than 70 vibration events of the same source per day. Most rapid transit projects fall into this category.
2 "Occasional Events" is defined as between 30 and 70 vibration events of the same source per day. Most commuter trunk lines have this many operations.
3 "Infrequent Events" is defined as fewer than 30 vibration events of the same kind per day. This category includes most commuter rail systems.
4 This criterion limit is based on levels that are acceptable for most moderately sensitive equipment such as optical microscopes. Vibration-sensitive manufacturing or research will require detailed evaluation to define the acceptable vibration levels. Ensuring lower vibration levels in a building often requires special design of the HVAC systems and stiffened floors.
5 Vibration-sensitive equipment is not sensitive to ground-borne noise.

- **Vibration Category 3: Institutional**—This category includes schools, churches, other institutions, and quiet offices that do not have vibration-sensitive equipment, but still have the potential for activity interference.

There are some buildings, such as concert halls, TV and recording studios, auditoriums, and theaters that can be very sensitive to vibration and ground-borne noise, but do not fit into any of these three categories. Special vibration level thresholds are defined for these land uses. In addition, FTA has established vibration criteria for fragile buildings (94 VdB, 0.2 in/sec) and very fragile buildings (90 VdB, 0.12 in/sec). The operational activities associated with the project would not reach these levels and therefore, these criteria are only evaluated in the construction impacts assessment (see Chapter 6, "Construction Impacts").

C. REGULATORY CONTEXT AND METHODOLOGY

AIRBORNE NOISE ANALYSIS METHODOLOGY

The analysis of airborne noise was performed using procedures set forth in the FTA guidance manual, *Transit Noise and Vibration Impact Assessment* (May 2006). Following the methodologies set forth in this document, airborne noise impacts should be analyzed using a three-step process that consists of a screening procedure, a general noise assessment, and a detailed noise analysis. The screening procedure is performed first to determine whether any noise-sensitive receptors are within distances where impacts are likely to occur. If the screening reveals that there are noise-sensitive receptors in locations where impacts are likely to occur, then a general noise assessment is performed to determine locations where noise impacts could occur. If this general assessment indicates that a potential for noise impact does exist, then a detailed noise analysis may be necessary. FTA's detailed analysis methodology is used to predict

impacts and evaluate the effectiveness of mitigation with greater precision than can be achieved with the general noise assessment. The methodology and results of the FTA noise analysis screening procedure are presented below.

STEP 1: NOISE SCREENING

The FTA methodology begins with a noise screening to determine whether any noise-sensitive receptors are within a distance where an impact is likely to occur. According to the FTA screening methodology, potential impacts may occur if noise receptors are within 750 feet of the centerline of a commuter rail mainline[1] if the pathway between the track and the receptor is unobstructed, or 375 feet from the track centerline if the pathway is obstructed (since obstructions block some noise and therefore reduce the distance the noise will travel).

Based on a review of current aerial photography and land-use maps, it was found that a noise-sensitive receptor, Hudson County Park at Laurel Hill (Laurel Hill Park), is located within the screening distances of the proposed project.

STEP 2: GENERAL NOISE ASSESSMENT

Since there may be sensitive receptors within the screening distance, a general noise assessment analysis was conducted to examine the effect of increased train speed and change in alignment on noise levels using the procedures contained in the FTA guidance manual. According to FTA's guidance document, the potential for noise impacts at sensitive land use locations would occur if the project-generated noise levels, or "noise exposure," exceed the levels shown in Figure 5.5-1.

The general noise assessment methodology consists of determining the project noise exposure at 50 feet from the centerline of track along portions of the rail line where the maximum train speed would increase, and comparing the calculated levels with the criteria based on land use categories. The FTA noise screening methodology determined that there was only one noise sensitive land use, Laurel Hill Park, within the screening distance. Laurel Hill Park would be an FTA land use Category 3, which uses the 1-hour L_{eq} noise metric. Existing noise levels at Laurel Hill Park were estimated to be 70 dBA $L_{eq(1)}$ (according to the procedure set forth in the FTA guidance manual for a noise sensitive land use located 50 to 100 feet from an Interstate Highway, in this case Interstate I-95, which is the same as the New Jersey Turnpike in the study area).

The calculations to predict the noise levels from the increased train speed and change in the alignment along the rail line branch take into account: the type of trains and type of locomotives, number of trains and number of locomotives on each train, the speed of the trains, characteristics of the track, and the time of day.

VIBRATION ANALYSIS METHODOLOGY

The vibration analysis for the project alternatives was performed using the procedures described in the FTA guidance manual, *Transit Noise and Vibration Impact Assessment* (May 2006). To examine potential impacts during operation, the FTA guidance document (similar to the approach

[1] FTA's guidance manual uses the term "Commuter Rail Mainline" as a description of the potential noise source. Although the Northeast Corridor is both a commuter rail line as well as an inter-city rail line, the term "Commuter Rail Mainline" will be used in this chapter to maintain consistency with the guidance.

for assessing noise) lays out a three-step approach for the analysis of vibration and ground-borne noise: a screening procedure, a general assessment methodology, and a detailed analysis methodology. The screening procedure is used to determine whether any noise-sensitive receptors are within distances where impacts are likely to occur; the general assessment methodology is used to determine locations or rail segments where there is the potential for impacts; and the detailed analysis methodology is used to predict impacts and evaluate the effectiveness of mitigation with greater precision than can be achieved with the general assessment.

Based upon existing land uses of the project's study area, the vibration analysis only requires a screening analysis for two reasons: (1) the lack of vibration sensitive receptors in the project study area, and (2) the vibration sensitive receptors that are located in the project study area are located at large distances from the centerline of the commuter rail tracks under each alternative. The methodology and results of the FTA vibration analysis screening procedure are presented below.

The first step in the FTA vibration analysis is to determine if there is the potential for a vibration impact based on the type of project. Since the Portal Bridge project is of the steel-wheel/steel-rail type, a vibration screening analysis was performed. Table 5.5-5 shows screening distances based upon the type of project and the category of land use involved.

Table 5.5-5
Screening Distances for Vibration Assessment

Type of Project	Critical Distance for Land Use Categories* Distance from Right-of-Way or Property Line (feet)		
	Category 1	Category 2	Category 3
Conventional Commuter Railroad	600	200	120
Rail Rapid Transit	600	200	120
Light Rail Transit	450	150	100
Intermediate Capacity Transit	200	100	50
Bus Project (if not previously screened out)	100	50	N/A

Note:
* The land-use categories are defined in Chapter 8 of the FTA Manual. Some vibration-sensitive land uses are not included in these categories. Examples are: concert halls and TV studios which, for the screening procedure, should be evaluated as Category 1; and theaters and auditoriums which should be evaluated as Category 2.
Source: Transit Noise and Vibration Impact Assessment, FTA, May 2006, pages 9-4.

No vibration sensitive land uses are located within their appropriate screening distances. Therefore, no further vibration analysis was performed, as specified in FTA's guidance manual.

D. NO ACTION ALTERNATIVE

Section B of Chapter 3, "Project Alternatives," describes several regional transportation projects that are expected to be completed by 2030. In the No Action Alternative, changes to the current rail service operations along the corridor could alter noise levels at land uses adjacent to the right-of-way. While these changes would be small (e.g., adding additional cars to an existing scheduled train) they could result in small increases that may result in adverse effects at more sensitive locations. The analysis of the No Action Alternative must also consider changes in the study area that could affect noise levels or noise sensitive receptors. For the most part the dominant noise source in area is the rail line, while some sites (such as the Hudson County Park at Laurel Hill) are also affected by noise from the New Jersey Turnpike. The most important change under the No Action Alternative would be the potential expansion of the Hudson County

Park at Laurel Hill. Therefore, the analysis focuses on the expanded park for the assessment of noise under the No Action Alternative.

Table 5.5-6 shows the results of the FTA general noise assessment for the No Action Alternative. As Laurel Hill Park is an FTA Category 3 land use, the predicted noise levels were calculated for the worst case peak hour. The general noise assessment concludes that the potential for moderate impacts would occur at noise sensitive locations approximately 322 feet from the centerline of the track, and the potential for severe impacts would occur at noise sensitive locations approximately 174 feet from the centerline of the track. Laurel Hill Park is outside the boundary of the FTA moderate and severe impact areas. Therefore, there is no impact at Laurel Hill Park in the No Action Alternative.

Table 5.5-6
No Action Alternative – General Noise Assessment Results

Land Use	Descriptor	Existing Predicted Noise Level ($L_{eq(1)}$)	Moderate Impact (Distance From Track Centerline)	Severe Impact (Distance From Track Centerline)	Potential Impacts?
Laurel Hill Park (Category 3)	$L_{eq(1)}$	70 dBA	322 Feet	174 Feet	No Impact
Note: For full definition of land use categories, see Table 5.5-3.					

As discussed in Chapter 5.1, "Land Use and Social Conditions," it is possible that a waterfront walkway will be constructed on the recently purchased 14.9-acre parcel as part of an expansion of Laurel Hill Park. The planned expansion of Laurel Hill Park is located east of the Hackensack River, north of the Northeast Corridor rail line, south of the New Jersey Turnpike, and south-west of the current Laurel Hill Park. The southern edge of the expansion of Laurel Hill Park is less than 100 feet from the track centerline. In the No Action Alternative, the portion of new parcel that is within 322 feet north of the Northeast Corridor would be in the FTA moderate impact boundary, and the portion of the new parcel that is within 174 feet north of the Northeast Corridor would be in the severe impact boundary.

E. PROBABLE IMPACTS OF THE BUILD ALTERNATIVES

As discussed in Chapter 3, "Project Alternatives," four feasible build alternatives (Alternatives FE, FS, DE, and DS) have been identified and Alternative DS is the preferred alternative. All the build alternatives would result in comparable noise levels since rail traffic would be similar. Table 5.5-7 shows the results of the FTA general noise assessment for the build alternatives. As Laurel Hill Park is an FTA Category 3 land use, the predicted noise levels were calculated for the worst case peak hour. The general noise assessment concludes that the potential for moderate impacts would occur at noise sensitive locations approximately 419 feet from the centerline of the track, and the potential for severe impacts would occur at noise sensitive locations approximately 226 feet from the centerline of the track. Over the Hackensack River, the tracks would be divided between the north bridge and south bridge in the proposed design. With respect to the northern bridge, the general assessment concludes that the potential for moderate impacts would occur at noise sensitive locations approximately 400 feet from the centerline of the track, and the potential for severe impacts would occur at noise sensitive locations approximately 216 feet from the centerline of the track. With respect to the southern bridge, the general noise assessment concludes that the potential for moderate impacts would occur at noise sensitive locations approximately 77 feet from the centerline of the track, and there is no potential for severe impacts at noise sensitive locations at any distance from the centerline of the

track. Since Laurel Hill Park is outside the boundary of the FTA moderate and severe impact areas, no adverse noise impacts would result in the park from the build alternatives.

With all build alternatives, a portion of the planned expansion of Laurel Hill Park parcel that is within 419 feet north of the Northeast Corridor would be subject to moderate noise impacts. The portion of the parcel that is within 226 feet north of the Northeast Corridor would be subject to severe noise impacts. Due to the proximity of the Laurel Hill Park expansion to the existing rail corridor, the No Action Alternative would also result in moderate and severe noise impacts on this resource. Therefore, the impacts that would occur at the Laurel Hill Park would be similar under any of the project alternatives, including the No Action Alternative.

Table 5.5-7
Build Alternatives – General Noise Assessment Results

Land Use	Descriptor	Existing Predicted Noise Level ($L_{eq(1)}$)	Moderate Impact (Distance From Track Centerline)	Severe Impact (Distance From Track Centerline)	Potential Impacts?
Laurel Hill park (Category 3)	$L_{eq(1)}$	70 dBA	419 Feet	226 Feet	No Impact
Note: For full definition of land use categories, see Table 5.5-3.					

Under the build alternative, no vibration sensitive land uses are located within their appropriate screening distances. Therefore, no further vibration analysis was performed. ✷

A. INTRODUCTION

This chapter assesses the potential for the proposed project to impact the ecological resources within the study area. These resources include: water quality; flooding and floodplains; open water and wetlands; ecologically sensitive areas; vegetative, fish and wildlife communities; and threatened and endangered species. It begins with a discussion of the regulatory context for these resources and the methodology used to perform the impact assessment. This is followed by a discussion of the existing conditions for each resource area and the impact assessment. The assessment includes a discussion of the measures that would be used to avoid, minimize, or mitigate any potential adverse effects.

B. REGULATORY CONTEXT AND METHODOLOGY

Many activities associated with the project would require compliance with federal and state legislation and/or regulatory programs that are intended to protect and regulate the ecological resources described above. The applicable federal and New Jersey state laws and regulatory programs are described below.

FEDERAL

EXECUTIVE ORDER 11990

In accordance with Executive Order 11990, "Protection of Wetlands," and USDOT Order 5660.1a, "Preservation of the Nation's Wetlands," federal agencies must avoid undertaking or providing assistance for new construction in wetlands unless there is no practical alternative to such construction and the proposed action includes all practicable measures to minimize harm to the wetland.

CLEAN WATER ACT (33 USC §§ 1251 TO 1387)

The objective of the Clean Water Act, also known as the Federal Water Pollution Control Act, is to restore and maintain the chemical, physical, and biological integrity of waters of the United States. Waters of the United States include streams, rivers, wetlands, mudflats, and sandflats that meet the specified requirements defined in 33 C.F.R. 328.3. The Clean Water Act regulates point sources of water pollution (such as discharges of municipal sewage and industrial wastewater and discharges of dredged or fill material into navigable waters and other waters of the United States) and non-point source pollution (such as runoff from streets, agricultural fields, construction sites, and mining).

Under Section 401 of the Act, any applicant for a federal permit or license for an activity that may result in a discharge to navigable waters must provide to the federal agency issuing a permit a certificate (either from the state where the discharge would occur or from an interstate water

pollution control agency) that the discharge would comply with Sections 301, 302, 303, 306, 307, and 316 (b) of the Clean Water Act.

Section 404 of the Act requires authorization from the Secretary of the Army, acting through the U.S. Army Corps of Engineers (ACOE), for the discharge of dredged or fill material into waters of the United States. Activities authorized under Section 404 must comply with Section 401 of the Act.

RIVERS AND HARBORS ACT OF 1899

Section 10 of the Rivers and Harbors Act of 1899 requires authorization from the Secretary of the Army acting through ACOE for: the construction of any structure in or over any navigable waters of the United States; the excavation from or deposition of material in these waters; or any obstruction or alteration in these waters. The purpose of this Act is to protect navigation and navigable channels. Any structures placed in navigable waters—such as pilings, piers, or bridge abutments up to the mean-high-water line—are regulated pursuant to this Act. The ACOE must evaluate, in the public interest, the benefits of the proposed activity versus potential detriments.

COASTAL ZONE MANAGEMENT ACT OF 1972 (16 USC §§ 1451 TO 1465)

The Coastal Zone Management Act of 1972 established a voluntary participation program to encourage coastal states to manage development within the state's designated coastal areas, reducing conflicts between coastal development and protection of resources within the coastal area. Federal permits issued in New Jersey must be accompanied by a Coastal Zone Consistency Determination that evaluates consistency with New Jersey's federally approved coastal zone management program.

MAGNUSON-STEVENS ACT (16 USC §§ 1801 TO 1883)

Section 305(b)(2)-(4) of the Magnuson-Stevens Act outlines the process for the National Marine Fisheries Service (NMFS) and the Regional Fishery Management Councils (in this case, the Mid-Atlantic Fishery Management Council) to comment on activities proposed by federal agencies (issuing permits or funding projects) that may adversely impact areas designated as Essential Fish Habitat (EFH). EFH is defined as those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity (16 USC §1802[10]).

Adverse impacts to EFH, as defined in 50 CFR 600.910(A), include any impact that reduces the quality and/or quantity of EFH. Adverse impacts may include:

- Direct impacts such as physical disruption or the release of contaminants;
- Indirect impacts such as the loss of prey or reduction in the fecundity (number of offspring produced) of a managed species; and
- Site-specific or habitat-wide impacts that may include individual, cumulative, or synergetic consequences of a Federal action.

ENDANGERED SPECIES ACT (ESA) OF 1973 (16 USC §§ 1531 TO 1544)

The ESA recognizes that endangered species of wildlife and plants are of aesthetic, ecological, educational, historical, recreational, and scientific value to the nation and its people. The Act forbids any government agency, corporation, or citizen from taking (i.e., harming or killing) endangered animals without a permit. Once a species is listed as threatened or endangered, the ESA requires that "critical habitat" be designated for that species, including areas necessary for

the recovery of the species. Federal agencies are forbidden from authorizing, funding, or carrying out any action which "destroys or adversely modifies" critical habitat.

FISH AND WILDLIFE (FWS) COORDINATION ACT (PL 85-624; 16 USC 661-667D)

The FWS Coordination Act entrusts the Secretary of the Interior with providing assistance to, and cooperation with, federal, state and public or private agencies and organizations, to ensure that wildlife conservation receives equal consideration and coordination with other water-resource development programs. These programs can include the control (such as a diversion), modification (such as channel deepening), or impoundment (dam) of a body of water.

EXECUTIVE ORDER 11988 (FLOODPLAIN MANAGEMENT)

Executive Order 11988 requires that federal agencies provide leadership and take action to reduce the risk of flood loss, to minimize the impact of floods on human safety, health and welfare, and to restore and preserve the natural and beneficial values served by floodplains.

NEW JERSEY

Most of the study area for the Portal Bridge Capacity Enhancement Project falls within the designated Hackensack Meadowlands District and is regulated by the New Jersey Meadowlands Commission (NJMC). Regulations issued by the New Jersey Department of Environmental Protection (NJDEP) also apply, as described below.

NJDEP TIDELANDS ACT (N.J.S.A. 12:3-1)

NJDEP's tidal wetlands regulations apply anywhere tidal inundation occurs on a daily, monthly, or intermittent basis, or areas formerly flowed by tidal waters. To use these lands, permission must first be obtained from the State, in the form of a tidelands license, lease, or grant (i.e., a "tidelands conveyance"). The Act explicitly includes all activities within the Hackensack Meadowlands District as defined by N.J.S.A. 13:17-4.

WATERFRONT DEVELOPMENT ACT (N.J.S.A. 12:5-3 AND N.J.A.C. 7:7 AND 7:7E)

The Waterfront Development Act regulates all plans for the development of any waterfront upon any navigable water or stream of New Jersey by any person or municipality, in the nature of individual improvement or development or as a part of a general plan which involves the construction or alteration of a dock, wharf, pier, bulkhead, bridge, pipeline, cable, or any other similar or dissimilar waterfront development.

FLOOD HAZARD AREA CONTROL ACT (N.J.S.A. 58:16A-50 ET SEQ. AND N.J.A.C. 7:13)

NJDEP's Coastal Management Program regulates waterfront development, coastal areas, tidelands (i.e., riparian rights), and flood hazard area encroachment. New Jersey regulates construction in certain flood hazard areas under the Flood Hazard Area Control Act, N.J.S.A. 58:16A-50 et seq., and N.J.A.C. 7:13. These flood hazard areas include "delineated" and "non-delineated" areas. Delineated streams within flood hazard areas are officially established and adopted in N.J.A.C. 7:13 by the State of New Jersey in accordance with N.J.S.A. 58:16A-52. All other flood hazard areas and the watercourses that create them are referred to as non-delineated flood hazard areas. Federal Emergency Management Agency (FEMA) maps are used to determine the boundaries of floodplains elevations in areas that are not delineated by the state. Alternatively, N.J.A.C. identifies

additional methods for calculating the flood hazard area boundaries. Construction in a floodplain regulated under the Flood Hazard Area Control Act may require a "general", "permit-by-rule", or "emergency" permit, depending upon the type and potential impacts of the proposed activity.

In addition to the Stream Encroachment Program, NJDEP regulates coastal zone activities under N.J.S.A. 12:5, the Waterfront Development Act; N.J.A.C. 7:7, the New Jersey Coastal Permit Program Rules; and N.J.A.C. 7:7E, Coastal Zone Management (CZM) Rules. Proposed development in undeveloped flood hazard areas may be prohibited depending upon the distance to a navigable water body and whether the development is a water-dependent use. These regulations may apply to the proposed project. Certain activities (e.g., some pier and bulkhead reconstructions) are exempt from some of these regulations.

On November 5, 2007, the NJDEP published final rules under the Flood Hazard Area (FHA) Control Act. In addition to changes to the FHA rules, the rules also affect select CZM rules; the NJDEP repealed parts of the CZM rules and reissued them to be generally consistent with new FHA rules (N.J.A.C. 7:7E – 3.25).

The FHA rules regulate activities within New Jersey flood hazard areas, essentially defined as those areas adjacent to a water body that would be inundated by the 100-year flood (plus an additional amount of water to account for adjacent-area runoff in fluvial areas). Historically, these rules were confined to fluvial (i.e., non-tidal) rivers; however, the NJDEP consolidated relevant portions of the FHA and CZM flood hazard rules. The NJDEP's rationale is that all FHAs (excluding those areas abutting the Atlantic Ocean) are riparian regardless of whether they are tidally influenced, and as such deserve similar treatment in the regulations. This consolidation was intended to simplify the application procedures and the Department's subsequent review, reduce the number of permits required for projects on tidal rivers, and standardize the methods for delineating FHAs.

The FHA rules regulate the following activities to prevent conditions that could increase or exacerbate flood damages to property or the environment:

- topographic alteration to a site,
- clearing/cutting/removal of vegetation,
- the creation of impervious surface,
- the storage of unsecured materials,
- the construction/reconstruction/enlargement of a structure, and/or
- the conversion of a building to a residential/public building.

Any of these activities that occur in a delineated or identified FHA are subject to the provisions of this rule. Furthermore, the rule regulates these activities within the riparian zone, which includes both regulated waters and surrounding vegetation within a designated distance of the regulated water.

COASTAL WETLANDS ACT OF 1970 (N.J.S.A. 13:9A)

The Wetlands Act of 1970 requires the NJDEP to regulate development in coastal wetlands. If a property is located near tidal waterway, coastal wetlands are likely to be present on the property. The regulated coastal wetlands are shown on maps prepared by the NJDEP. The coastal wetlands maps are used to determine jurisdiction. A coastal wetlands permit is required to excavate, dredge, fill, or place a structure on any coastal wetland shown on the maps.

OTHER APPLICABLE REGULATIONS, PERMITS, AND APPROVALS

Other permits or approvals potentially required could include Soil Erosion and Sediment Control Plan Approval, NJDEP Stream Encroachment Permit, New Jersey Meadowlands Commission Permits, Zoning Certificate/Certificate of Occupancy, and a U.S. Coast Guard (USCG) Hazards to Navigation Assessment.

METHODOLOGY

This section describes the methods used to assess the potential impacts of construction and operation of the project alternatives. Assessments include analyses of potential impacts to water quality, floodplains/flooding, navigable waterways, jurisdictional wetlands and open waters, ecologically sensitive areas, vegetative, fish, and wildlife communities, and threatened and endangered (T&E) species.

DATA SOURCES

The data sources used in the analysis of ecological impacts are listed in Table 5.6-1. In addition to these data sources, field surveys were performed where feasible.

Table 5.6-1
Data Sources

Data or Information Required	Description
Aerial Photography	Digital Orthophotographs
County Soil Surveys	Soil unit codes and soil delineations
Federal Emergency Management Agency (FEMA) Floodplain Mapping	Floodplain areas present near the Portal Bridge were identified and mapped based on FEMA data
NJDEP T&E Species Information	NJDEP Natural Heritage Program's Threatened and Endangered Species delineations
NJDEP Wetland and Land Use/Land Cover GIS Maps	Natural and disturbed wetland categories of tidal and freshwater wetlands and land use/land cover data
NOAA Navigation Charts	NOAA navigational charts were consulted to identify potential impacts to navigation
NWI Mapping	National Wetlands Inventory Mapping
Overwater Staging Areas for Barges or Other Construction Equipment	Estimates of over-water coverage area and duration to address shading and lost productivity impacts
Project CAD Files	Digital files of project alternatives alignments and footprints
Sediment Quality Data and Analyses	Review of available sediment data to assess potential water quality impacts owing to sediment resuspension
ACOE Environmental Documentation	Completed/Issued Jurisdictional Determinations, Clean Water Act Section 401 and Rivers and Harbors Act Section 10 Permits, etc.
FWS T&E Species Information	Threatened and Endangered species delineations and documentation
U.S. Geological Survey Topographic Maps	7.5 minute topographic maps

IMPACT ASSESSMENT METHODOLOGY

Water Quality

To characterize the existing water quality in the study area, available resource management agency data on relevant water and sediment quality parameters were obtained. In addition, peer-reviewed literature on these parameters was considered and incorporated, as appropriate. Efforts

concentrated on obtaining data on sediment quality for areas projected to be disturbed by project activities, and secondarily on sediment quality in the immediate project area. Sediment quality data for the general project area (lower Hackensack River) has been included only in the absence of more specific data, or to supplement such data as necessary. Information on the existing water quality criteria for the subject waterbody was also obtained.

For each project alternative, the potential for sediment re-suspension or disturbance from in-water work was assessed for potential impacts to water quality. The evaluation included an assessment of construction impacts and operational effects on water quality for each project alternative, including an assessment of the introduction of pollutants from disturbed sediment to wetlands or surface waters, potential for accidental pollution discharge, and changes to stormwater runoff/discharge. Design elements to mitigate or minimize any adverse water quality impacts were identified and assessed. Water quality control elements were incorporated into project design or mitigation measures, as appropriate.

Floodplains

According to FRA's "Procedures for Considering Environmental Impacts" and Executive Order 11988 and USDOT Order 5650.2, the potential for project alternatives to affect a base floodplain must be determined. If one of the alternatives would affect a base floodplain, the following issues must be evaluated: any risk associated with each alternative; the impacts on natural and beneficial floodplain values; the degree to which the alternative supports incompatible development in the base floodplain; and the adequacy of the methods proposed to minimize harm.

FEMA base floodplains (i.e., areas that have a greater than one percent chance of flooding in a given year) and mapped floodplains within each alternative were delineated by consulting Flood Insurance Rate Maps. Base flood elevation levels were also identified, and applicable local flood studies were reviewed. Historic flood studies were compared to existing conditions to ensure that referenced studies are relevant.

For project activities on the identified floodplain, an analysis of alternatives was conducted that documented the necessity of placing structures on the floodplain. The current FEMA flood hazard area has been identified, and any change to the flood hazard area associated with each alternative has been identified. Design elements to mitigate or reduce any flooding impacts were identified and evaluated. These elements were tied to wetland mitigation measures if determined that wetland mitigation design would reduce or ameliorate flooding impacts.

Wetlands and Open Waters

Existing documentation was reviewed to assess the extent of the wetlands and open waters in the study area. Information resources included U.S. Geological Survey 7.5 minute topographic maps, U.S. Department of Agriculture Natural Resource Conservation Service maps, NJDEP freshwater and tidal wetland mapping data, and National Wetland Inventory mapping products. Additional information from ACOE and the NJMC was consulted to supplement the available data, as appropriate, as well as peer-reviewed and other literature.

The wetland habitats within the project vicinity were initially characterized based on existing data, documentation, mapping, and reports available from these secondary sources of information. These areas were then visually surveyed, where feasible, to further characterize species composition, and to assess overall wetland quality, functions, and values.

Using geographic information systems (GIS), potential temporary and long-term impacts to wetlands and open waters associated with the project's construction and operation were identified. Impacts

were quantified for each alternative in accordance with state and federal regulations. The evaluation included an assessment of construction impacts and operational effects on wetlands and open waters. In accordance with NEPA, the analysis included ongoing interagency coordination with agencies such as ACOE, NJMC, USEPA, USFWS, NJDEP, and USCG. In addition, the Meadowlands Interagency Mitigation Advisory Committee (MIMAC), which includes representatives from several agencies, was consulted. For each alternative, measures to avoid or minimize adverse impacts to wetlands were evaluated in accordance with Section 404(b)(1) guidance. The functions and values of affected wetlands were assessed and discussed with regulatory agencies and stakeholders. In cases where wetland and/or open water impacts were determined to be unavoidable, compliance with applicable regulations and the need for permit approvals mitigation measures was assessed and documented for approval by the appropriate local, state, or federal agency.

Ecologically Sensitive Areas and Coastal Zone Consistency

Ecologically sensitive areas in the study area include wetlands and grassland habitat within the Meadowlands District. The above resources were reviewed to determine if any such areas exist within or near the project site. For each alternative, potential impacts to ecologically sensitive areas or designated coastal zone resources were identified in consultation with NJDEP and other agencies. Any alternative having the potential to adversely impact an ecological sensitive area was identified and steps were taken to minimize or eliminate the impact in the alternative's design. In addition, each alternative was evaluated with respect to its consistency with local coastal zone revitalization or waterfront development regulations. Any coastal zone encroachment or impingement upon ecologically sensitive areas was mapped utilizing GIS. The results of the coastal zone analysis are presented in Chapter 5.8, "Coastal Zone Management."

Vegetative, Fish, and Wildlife Communities Including Threatened and Endangered (T&E) Species

The Meadowlands watershed hosts organisms that utilize a wide range of habitats. These organisms include aquatic plants, benthic invertebrates, fish, amphibians, reptiles, birds, and mammals, including several T&E species. The NJDEP Division of Fish and Game identifies fifteen bird species, one reptile species, and seven plant species of special status potentially occurring within the Meadowlands.

Existing data was reviewed to determine the vegetative, fish, and wildlife communities likely to be present in the area. Relevant studies conducted by the Meadowlands Environmental Research Institute, Rutgers University, and other academic institutions were also reviewed.

In order to assess the presence of T&E species and in accordance with Section 7 of the ESA, the FWS, National Marine Fisheries Services (NMFS), NJDEP Natural Heritage Program, and NJDEP Landscape Project were consulted for available data on the presence or absence of any state or federally protected species within the project area. This information was used to promote interactive discussions with these agencies as the project progresses.

Potential impacts to flora or fauna were assessed for each alternative based on existing documentation and data collected during field observations. The nature of the potential temporary or permanent impacts for each alternative was evaluated, as well as the expected ability of the affected wildlife communities to adjust to disturbance. The evaluation included an assessment of construction impacts (e.g., noise, sediment re-distribution, etc.) and operational effects (e.g., noise, dust, train traffic, etc.) on aquatic, terrestrial, and avian species.

For each alternative, the potential to affect T&E species was evaluated during the assessment of potential impacts to vegetative, fish, and wildlife communities. The T&E assessment drew upon

data gathered from the above-mentioned resource management agencies and from observations made during site visits.

As with wetlands and ecologically sensitive areas, it is necessary to avoid, minimize, and/or mitigate impacts to vegetative, fish, and wildlife communities to the extent practicable. Alternatives having the potential to adversely impact plant or animal communities (including T&E species) were identified, and steps were taken to minimize or eliminate such impacts. Mitigative measures to offset unavoidable impacts to these communities were identified.

C. EXISTING CONDITIONS

For the purposes of this ecological impact assessment, the primary study area includes areas that would be directly impacted by the project elements either during construction or operation (see Figure 5.6-1). The primary study area is generally bounded by Secaucus Transfer Station to the east and Swift Interlocking to the west, and extends 2,000 feet north and 2,000 feet south of the Northeast Corridor. A broader secondary study area was defined to consider the larger ecological context of the region and account for contiguous wetland and open water areas.

As described in Chapter 2, "Project Purpose and Need," the existing Portal Bridge is an approximately 961-foot rail bridge spanning the Hackensack River and associated wetlands. The Hackensack River is the most prominent ecological feature in the project area. The river is approximately 45 miles (72 km) long, flowing through New York and New Jersey and ultimately discharging into Newark Bay (a sub-estuary of New York Harbor). The Hackensack watershed includes parts of the New Jersey suburban area west of the lower Hudson River, which it roughly parallels, separated from New York City by the New Jersey Palisades. The Hackensack River flows through and drains the New Jersey Meadowlands. The lower Hackensack River, which is navigable as far as the City of Hackensack, forms a commercial extension of Newark Bay. In addition, some private and commercial marinas exist upriver of the project area.

WATER QUALITY

Surface Water Quality Standards for New Jersey Waters are designated in N.J.A.C. 7:9 B. These standards establish the designated uses to be achieved and specify the water quality criteria necessary to protect the State's waters. Designated uses include potable water, propagation of fish and wildlife, recreation, agricultural and industrial supplies, and navigation. These are reflected in use classifications assigned to specific waters. The Hackensack River is designated Use Class SE2 (which signifies that it is a type of saline estuary defined in state regulations). In all SE2 waters, the designated uses are:

- Maintenance, migration, and propagation of the natural and established biota;
- Migration of diadromous fish;
- Maintenance of wildlife;
- Secondary contact recreation; and
- Any other reasonable uses.

Tidal tributaries in the project area are designated Use Class FW2-NT/SE2. The SE2 designation is defined above, while the NT designation indicates that the tributaries are not designated as trout waters. The FW2 general surface water classification is applied to those fresh waters that are not designated as FW1 or pineland waters. In all FW2 waters the designated uses are:

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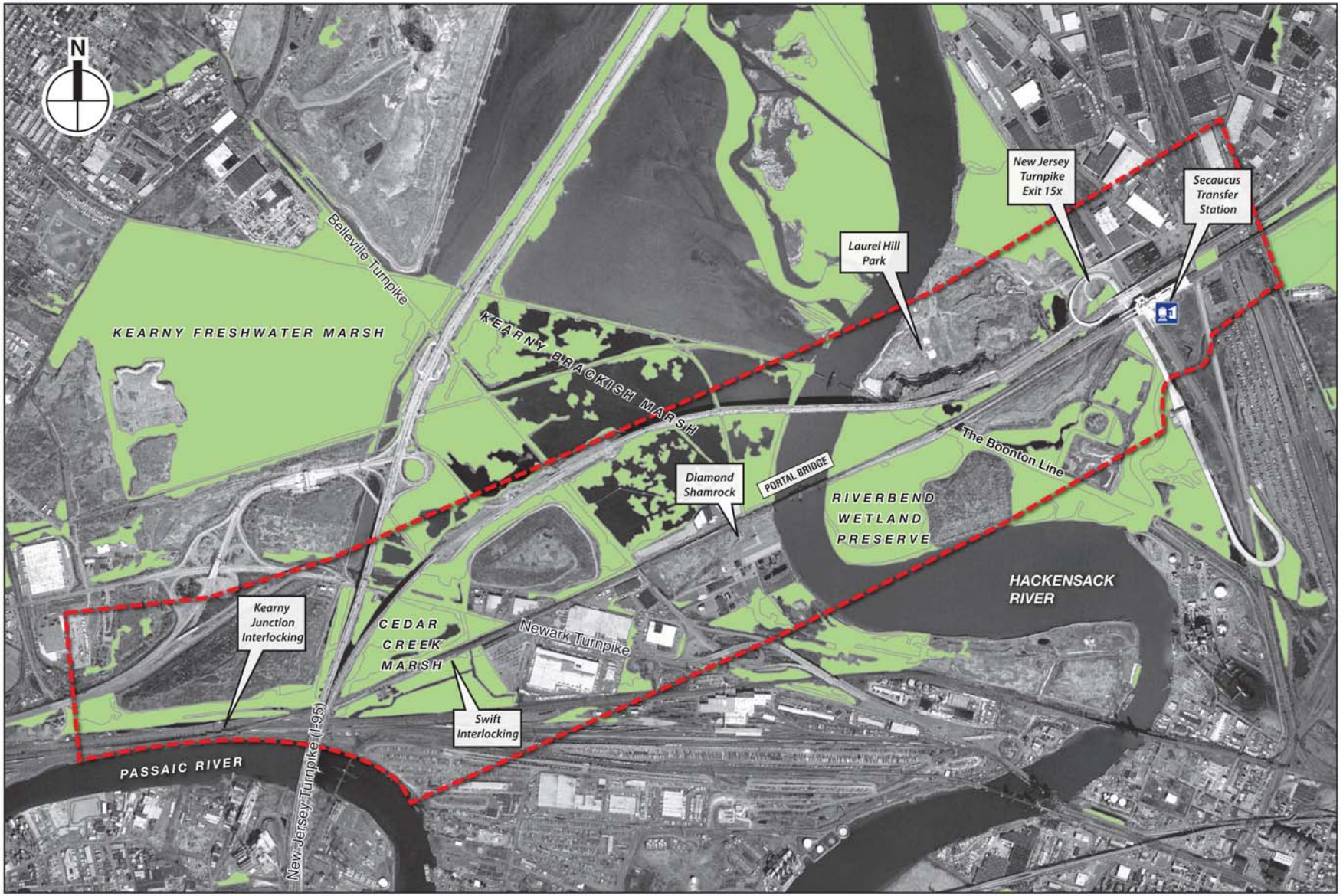

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Wetlands Map
Figure 5.6-1

- Maintenance, migration, and propagation of the natural and established biota;
- Primary and secondary contact recreation;
- Industrial and agricultural water supply;
- Public potable water supply after conventional filtration treatment (a series of processes including filtration, flocculation, coagulation, and sedimentation, resulting in substantial particulate removal but no consistent removal of chemical constituents) and disinfection; and
- Any other reasonable uses.

As of 2006, the Hackensack River in the project area was in non-attainment of Surface Water Quality Standards for New Jersey Waters for aquatic life (general) and for fish consumption. Waters below the Portal Bridge are in full attainment for industrial water supply. Insufficient data exist to designate attainment status for the Hackensack River near the project area for primary and secondary contact recreation, drinking water supply, or agricultural water supply (NJDEP 2006).[1]

The New York Harbor Estuary and its tributaries have had a long history of industrialization along its shores, which continues to affect water quality as pollutants residing mostly in the sediments are dissolved and redistributed. In a tidally mixed water body, water exchange with the Atlantic Ocean tends to dilute waterborne contaminants, but the historically degraded sediments continue to provide new contaminants that affect water quality. Thus, the water quality of the system is coupled tightly to the quality of sediments, but can also be affected by other sources (e.g., industrial discharges).

As discussed in Chapter 5.7, "Contaminated Materials," many area sediments contain low concentrations of contaminants such as heavy metals, PCBs, PAHs, and other organic compounds. Sediments nearest former (or active) industrial sites may exhibit much higher local concentrations, and can result in localized areas of high contaminant concentrations, or "hot spots." Active and closed landfills abut many of the region's waterways and may leach contaminants into the waters. In addition, many former wetlands throughout the region have been filled with a mixture of materials including municipal waste and incinerator ash. Lastly, combined sewer outfalls (CSOs) contribute significantly to regional pollution by introducing fecal coliform bacteria, floatable debris, and other contaminants. Recent sediment quality investigations near the project area have revealed the presence of a number of contaminants present in Hackensack Meadowlands sediments, including chromium, lead, arsenic, mercury, 4,4'-DDE (a pesticide), flouranthane, pyrene, anthracene, and many others (Barrett and McBrien 2007).[2] Other investigators have identified a similar suite of contaminants, all within a few river miles of the project site (e.g., Weis et al. 2004,[3] Sorensen et al. 2007,[4] Bonnevie et al. 1993[5]).

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[1] New Jersey Department of Environmental Protection (NJDEP). *New Jersey Integrated Water Quality Monitoring and Assessment Report.* Trenton, NJ. December 2006.

[2] Barrett, K.R., and M.A. Mcbrien. "Chemical and biological assessment of an urban, estuarine marsh in Northeastern New Jersey, USA." Environ. Monit. Assess. 124:63-88. 2007.

[3] Weis, J.S., J. Skurnick, and P. Weis. "Studies of a contaminated brackish marsh in the Hackensack Meadowlands of Northeastern New Jersey: Benthic Communites and Metal Contamination." *Marine Pollution Bulletin* 49:1025-1035. 2004.

[4] Sorensen, M.T., J.M. Conder, P.C. Fuchsman, L.B. Martello, R.J. Wenning. "Using a Sediment Quality Triad Approach to Evaluate Benthic Toxicity in the Lower Hackensack River, New Jersey." Arch. Environ. Contam. Toxicol. 53, 36-49. 2007.

[5] Bonnevie, N.L., R.J. Wenning, S.L. Huntly, and H. Bedbury. "Distribution of Inorganic Compounds in Sediments from Three Waterways in Northern New Jersey." Bull. Environ. Contam. Toxicol. 51:672-680. 1993.

FLOODPLAINS

As shown in Figure 5.6-2, although the existing Portal Bridge and Northeast Corridor tracks and embankments are not located within the 100-year floodplain, a significant portion of the study area is within the 100-year floodplain. On the eastern half of the Hackensack River, the 100-year floodplain extends from the river bank approximately to the location of the Boonton Line. On the western side of the Hackensack River, the majority of the project study area, both to the north and to the south of the existing Northeast Corridor, is located in the 100-year floodplain.

WETLANDS

The project area is located within the New Jersey Meadowlands District. The New Jersey Meadowlands District is an area of approximately 19,730 acres (32 square miles) in Bergen and Hudson Counties, of which approximately 8,400 acres (13 square miles) are wetlands, waterways, and open space (NJMC 2007).[1] The New Jersey Meadowlands (formerly known as the Hackensack Meadowlands) has been suggested as being the largest urban wetland complex in the northeastern United States (USFWS 2002).[2] There a number of wetland and open water complexes within the primary study area (see Figure 5.6-1). These include the Riverbend Wetland Preserve (a *Phragmites*-dominated coastal wetland complex), the Kearny Brackish Marsh (an open water and herbaceous wetland complex), and the Cedar Creek Marsh (an open water and deciduous scrub/shrub wetland area), in addition to other jurisdictional wetlands.

As described above, a broader secondary study area was defined to consider the larger ecological context of the region and account for contiguous wetland and open water areas. Based on wetland data available through NJDEP databases and other resources, the secondary study area includes approximately 271 acres of wetlands (NJDEP 2007),[3] the majority of which have been disturbed through historic development and other human activities over the past 30 years.

As shown in Table 5.6-2, *Phragmites*-dominated coastal wetlands (212 acres) comprise approximately 78 percent of the wetland resources present within the secondary study area. This is representative of the Meadowlands District, within which *Phragmites*-dominated wetlands comprise a majority of the wetlands. Based on field investigations performed within the study area, these areas were observed to consist generally of dense monotypic stands of *Phragmites*, with sparse amounts of other tidal vegetation including saltmarsh cordgrass (*Spartina alterniflora)*, spikegrass (*Distichlis spicata*), salt hay (*Spartina patens)*, marsh elder (*Iva frutescens*), and groundselbush (*Baccharis halimifolia*). *Phragmites*-dominated interior/freshwater wetlands (26 acres) also exist within the secondary project area. These areas, which are not tidally influenced or hydrologically connected to tidal waterbodies, comprise approximately 10 percent of the wetlands present within the secondary study area. Similar to the *Phragmites*-dominated coastal wetlands, these areas consist of dense monotypic stands of *Phragmites*, with little other vegetation present.

[1] New Jersey Meadowlands Commission. http://www.meadowlands.state.nj.us/natural_resources/index.cfm.

[2] U.S. Fish and Wildlife Service, National Wetland Inventory Program. *Wetland Status and Trends for the Hackensack Meadowlands.* December 2002.

[3] NJDEP iMap database. 2007.

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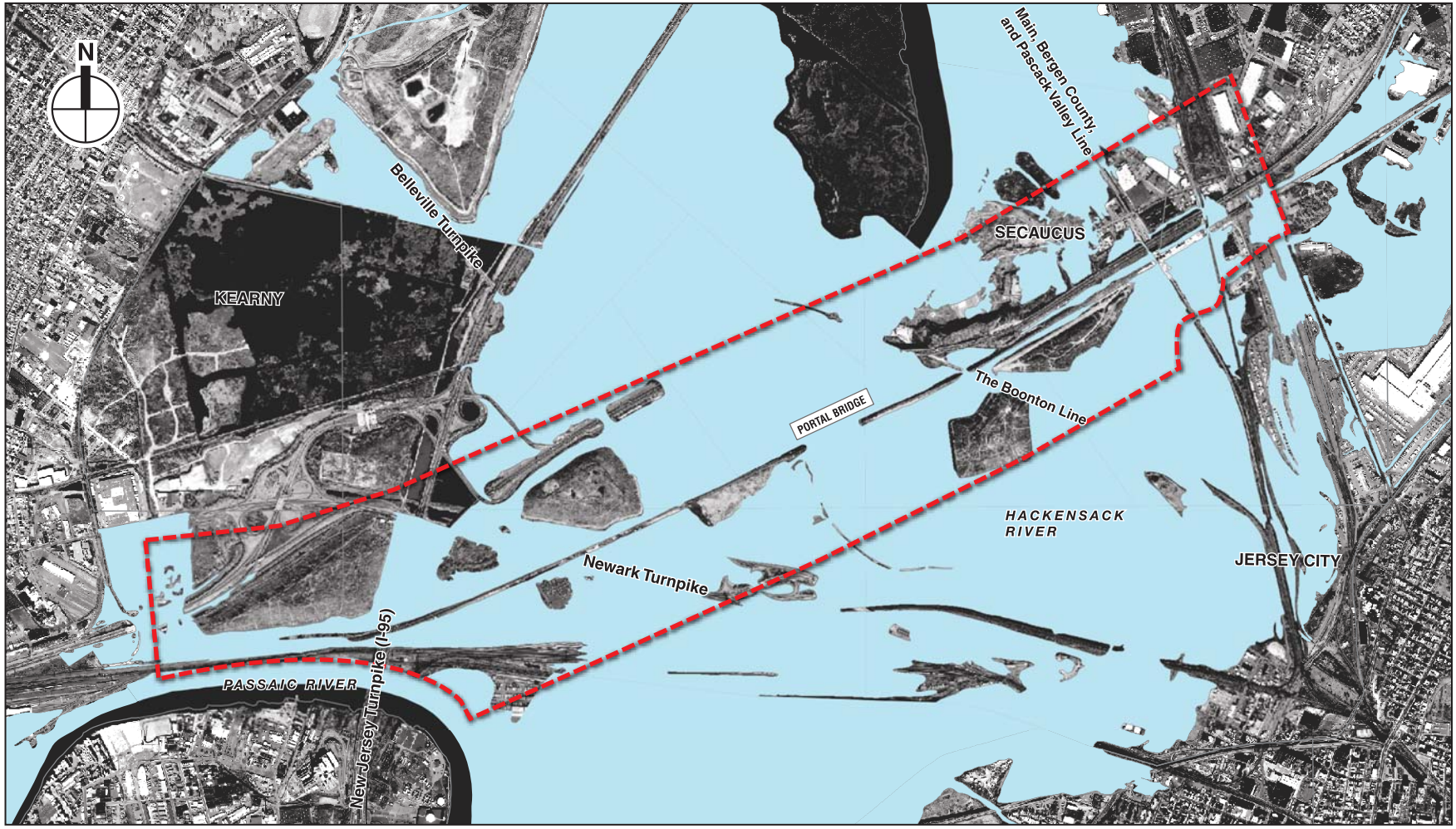

Study Area

100-Year Floodplain

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Floodplain Map
Figure 5.6-2

Table 5.6-2
Wetlands Identified Within Study Area, by Type

Primary Classification	Size (Acres)
Deciduous scrub/shrub wetlands	15
Herbaceous wetlands	14
Managed wetland in maintained lawn greenspace	2
Phragmites-dominated coastal wetlands	212
Phragmites-dominated interior wetlands	26
Saline marsh (low marsh)	2
Total	271

Notes:
[1] "Wetland Complex" includes single wetland areas or multiple wetland areas observed within close proximity to one another.
[2] "Primary Classification" based on NJDEP 2002 Land Use Data, as presented in NJDEP iMap database.
Source: NJDEP iMap database, 2007.

Approximately 5 percent of the wetlands observed within the secondary study area are characterized by the NJDEP as deciduous scrub-shrub wetlands (15 acres). These areas typically are comprised of *Phragmites*, with scrub-shrub species present at a lesser extent. Other herbaceous wetlands not dominated by *Phragmites* (14 acres) comprise approximately 5 percent of the wetlands within the secondary study area. Based on field observations, non-*Phragmites* dominated emergent wetlands observed in the general vicinity of the study area were vegetated with commonly occurring emergent plant species, including broad-leaf cattail (*Typha latifolia*), softrush (*Juncus effusus*), and various species of sedges (Carex spp.). Less than 1 percent of the wetlands within the project vicinity are characterized as saline low-marsh wetlands (2 acres). Areas identified by the NJDEP as "managed wetlands in maintained lawn greenspace" (2 acres) also comprise less than 1 percent of the secondary study area. A small portion of the project area lies within regulated wetland buffer area. Based on the fact that the study area is highly developed with a number of linear features—such as railroads, paved access roads, utility rights-of-way, and man-made earthworks—the value of these areas as wetland buffers is low.

OPEN WATER

PHYTOPLANKTON

Phytoplankton are microscopic plants whose movements are largely governed by prevailing tides and currents. Light penetration, turbidity, and nutrient concentrations are important factors in determining phytoplankton productivity and biomass. While nutrient concentrations in most areas of the Hackensack River are very high, rapid light attenuation (due to high turbidity) limits the occurrence of phytoplankton blooms. Because of the strong currents and high rate of tidal exchange, planktonic organisms found in Lower New York Harbor and Newark would also be expected to occur in the Hackensack River.

ZOOPLANKTON

Zooplankton are an integral component of aquatic food webs. Zooplankton typically are the principal grazers on phytoplankton and detritus material, and are themselves consumed by organisms at higher trophic levels. The higher-level consumers of zooplankton generally include forage fish, such as bay anchovy (*Anchoa mitchilli*), as well as commercially and recreationally important species, such as striped bass (*Morone saxatilis*) and white perch (*M. americana*)

during their early life stages. Predacious zooplankton species can consume eggs and larvae, and can have a detrimental effect on certain fish species. Crustacean taxa are generally the most abundant group of zooplankton collected in New York Harbor Estuary. The most dominant species include the copepods *Acartia tonsa*, *Acartia hudsonica*, *Eurytemora affinis*, and *Temora longicornis*, with each species being prevalent in certain seasons (Stepien et al. 1981,[1] Lonsdale and Cosper 1994,[2] Perlmutter 1971,[3] Lauer 1971,[4] Hazen and Sawyer 1983).[5]

FISH

The Hackensack River discharges into Newark Bay, and ultimately into the New York Bight of the Atlantic Ocean via the Arthur Kill and the Kill Van Kull. This estuarine environment results in a mixture of habitats in the Hackensack River that can support marine fish, estuarine fish, anadromous fish (fish that migrate up rivers from the sea to breed in freshwater), and catadromous fish (fish that live in freshwater but migrate to marine waters to breed). Table 5.6-3 lists fish that may be seasonally abundant in the Hackensack River. Additionally, an Essential Fish Habitat Assessment is provided in Appendix C.

MARINE SPECIES

Winter flounder, scup, and bluefish are marine species present in the Hackensack River. Winter flounder is an important commercial and recreational fish species that prefers cold water. Adults have a short migration pattern, moving offshore a short distance in spring and returning to shallow inshore or estuarine waters in late fall (Bigelow and Schroeder 1953).[6] Winter flounder spawn in the lower Hudson estuary during winter and early spring. This species prefers sandy bottoms in shallow water where freshwater from the estuary dilutes salinities to slightly below full ocean concentration (Pereira et al. 1999).[7] The presence of adult-size winter flounder during the winter months in the lower Hackensack River may indicate possible spawning activity in that area, which the species most likely uses as a residence during these months. Winter flounder have a varied diet of small invertebrates and fish fry (Grimes et al. 1989).[8]

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[1] Stepien, J.C., T.C. Malone, and M.B. Chervin. "Copepod Communities in the Estuary and Coastal Plume of the Hudson River." *Estuarine, Coastal and Shelf Science* 13:185-194. 1981.

[2] Lonsdale, D.J., and E.M. Cosper. "Phytoplankton Productivity and Zooplankton Feeding and Productivity in the Lower Hudson River Estuary." Marine Sciences Research Center, SUNY, Stony Brook, NY. Final report to the Hudson River Foundation, New York, NY. 1994.

[3] Perlmutter, A. "Ecological Studies Related to the Proposed Increase in Generating Capacity at the Astoria Power Station of Consolidated Edison." Report prepared for the Consolidated Edison Company of New York, Inc. 1971.

[4] Lauer, G. "Preliminary Studies Concerning Effects of Cooling System Transport Upon Planktonic Organisms at the Astoria Power Station, Queens, NY." Report prepared for Consolidated Edison Company of New York, Inc. 1971.

[5] Hazen and Sawyer. Newtown Creek Water Pollution Control Plant. Revised application for modification of the requirements of secondary treatment under Section 301(h), PL 97-117. Prepared for the City of New York, Department of Environmental Protection. 1983.

[6] Bigelow, H.B. ad W.C. Schroeder. "Fishes of the Gulf of Maine." *Fishery Bulletin of the Fish and Wildlife Service* Volume 53. 1953.

[7] Pereira, J.J., R. Goldberg, J.J. Ziskowski, P.L. Berrien, W.W. Morse, and D.L. Johnson. Essential Fish Habitat Source Document: "Winter Flounder, Pseudopleuronectes americanus, Life History and Habitat Characteristics." National Marine Fisheries Service. NOAA Technical Memorandum NMFS-NE 138. 1999.

[8] Grimes, B.H., M.T. Huish, J.H. Kerby, and D. Moran. "Species Profiles: Life Histories and Environmental Requirements of Coastal Fishes and Invertebrates (Mid-Atlantic): Summer and Winter Flounder." *U.S. Fish and Wildlife Service Biological Report* 82(11.112). U.S. Army Corps of Engineers, TR EL-82-4. 1989.

Table 5.6-3
List of Fish Species Common in the Hackensack River

Common Name	Scientific Name
Alewife	*Alosa pseudoharengus*
American eel	*Anguilla rostrata*
American shad	*Alosa sapidissima*
Atlantic herring	*Clupea harengus*
Atlantic silverside	*Menidia menidia*
Atlantic tomcod	*Microgadus tomcod*
Bay anchovy	*Anchoa mitchilli*
Bluefish	*Pomatomus saltatrix*
Butterfish	*Peprilus triacanthus*
Mummichog	*Fundulus heteroclitus*
Northern searobin	*Prionotus carolinus*
Scup	*Stenotomus chrysops*
Striped bass	*Morone saxatilis*
Summer flounder	*Paralichthys dentatus*
White perch	*Morone americana*
Winter flounder	*Pseudopleuronectes americanus*

Scup, or porgy, is a marine species that migrates inshore during late spring. It tends to remain close to the coast during the summer months before moving offshore during the fall to deeper waters. Scup are bottom feeders that spawn from May through August (Bigelow and Schroeder 1953).

Bluefish is a pelagic species whose young migrate into estuaries and harbors along the coast during late spring or early summer. The major spawning grounds of the bluefish are located on the outer continental shelf, and the resulting young move inshore in the late summer to forage (Bigelow and Schroeder 1953). Incidence of young bluefish in the Hackensack River is related to this migration pattern.

ESTUARINE SPECIES

Species that have been found in abundance within the Hackensack River are the resident fish bay anchovy, Atlantic silverside, striped and common killifish/mummichog (*Fundulus majalis* and *Fundulus heteroclitus*, respectively), and white perch. These species are important as forage species for larger predator fish and are commonly used as bait by fishermen.

Bay anchovy are found in salinities ranging from fresh to seawater. This species is common in its range and may be the most abundant species in the western north Atlantic (McHugh 1967 in Vougilitois et al. 1987).[1] Bay anchovy use the New York Harbor Estuary extensively for spawning, embryonic development, and hatching (Tipton 2003).[2] Spawning in the New York Bight occurs from about May through September and females spawn many times per year (Houde and Zastrow 1991).[3] Trawl data indicate that north of Delaware Bay, bay anchovy move

[1] McHugh, J.L. "Estuarine nekton," in *Estuaries* (G.H. Lauff, ed.), pp.581-620. AAAS, Washington. 1967.

[2] Tipton, Ronald C. Distributional Ecology of Bay Anchovy (Anchoa mitchilli) in the Hudson River Estuary, USA, Dissertation, West Virginia University. 2003.

[3] Houde, E.D., and C.E. Zastrow. "Bay anchovy *Anchoa mitchilli*." In *Habitat Requirements for Chesapeake Bay Living Resources*, S.L. Funderburk, J.A. Mihursky, S.J. Jordan and D. Riley (eds.), 2nd edition. Chesapeake Research Consortium, Inc., Solomons, MD. pp.8-1 to 8-14. 1991.

out of estuaries and southward during the fall and are virtually absent from the inshore continental shelf of New York during the winter months (ASA 2001).[1]

Atlantic silversides are small fish that school in shallow water and are permanent residents of the estuary. They spawn in May through early July and mature in one year. Atlantic silversides are omnivorous and feed chiefly on copepods, mysids, shrimp, amphipods, cladocerans, fish eggs, young squid, annelid worms, and mollusk larvae (Bigelow and Schroeder 1953).

Common killifish spawn primarily in fresh or brackish water, usually from spring to late summer or early autumn. Adults generally mature during their second year. Spawning occurs in summer among the stalks of emergent vegetation in intertidal salt marshes (Able et al. 2006)[2]. Striped killifish spawn in shallow water close to shore from June through August, and again mature in their second year. Both species feed primarily on crustaceans and polychaetes (Abraham 1985).[3]

White perch is an additional estuarine species that has been found in the Hackensack River. Adult white perch migrate to shallow fresh and slightly brackish water in the spring and early summer to spawn, after which they return to the lower estuary. The juveniles inhabit creeks and inshore areas until they are about a year old (Heimbuch et al. 1994).[4] Small white perch primarily eat invertebrates. Larger white perch in salt and brackish water eat small fish fry, crabs, shrimp, and other invertebrates.

ANADROMOUS SPECIES

Anadromous species that may use the Hackensack River include striped bass, tomcod, and members of the herring family. Striped bass use the Hackensack River and other waterways in the New York Bight for migration from fall through spring. Mature striped bass return from marine waters to fresh water to spawn before migrating back to salt water. The young then use the brackish waters as nursery and wintering area. Juvenile striped bass migrate to marine waters when nearing maturity. The majority of adults then spend much of their time in coastal, bay, and river mouth waters before returning to spawn in the spring each year (Bigelow and Schroeder 1953). Juvenile striped bass eat a variety of invertebrates, and adults eat a variety of fish and may also eat shrimp. Young-of-the-year and older striped bass have been shown to overwinter in large numbers in the lower Hudson River estuary. They feed primarily on invertebrates; as they grow, striped bass feed primarily on fish (Fay et al. 1983).[5]

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[1] ASA Analysis and Communications Inc. (ASA). "1998 Year Class Report for the Hudson River Estuary Monitoring Program." Prepared for Central Hudson Gas and Electric Corporation by ASA, New Hampton, NY. 2001.

[2] Able, K.W., S.M. Hagan and S.A. Brown. "Habitat Use, Movement and Growth of Young-of-the-Year Fundulus spp. in Southern New Jersey Salt Marshes: Comparisons Based on Tag/Recapture." *Journal of Experimental Marine Biology and Ecology* 335 (2006) 177-187. 2006.

[3] Abraham, B.J. "Mummichog and Striped Killifish. Species Profiles: Life Histories and Environmental Requirements of Coastal Fishes and Invertebrates." U.S. Fish and Wildlife Service for U.S. Army Corps of Engineers Waterways Experiment Station Coastal Ecology Group and the National Coastal Ecosystems Team, Division of Biological Services, U.S. Fish and Wildlife Service. 1985.

[4] Heimbuch, D., S. Cairns, D. Logan, S. Janicki, J. Seibel, D. Wade, M. Langan, and N. Mehrotra. "Distribution Patterns of Eight Key Species of Hudson River Fish." Coastal Environmental Services, Inc. Linthicum, MD. Prepared for the Hudson River Foundation, New York, NY. 1994.

[5] Fay, C.W., R. Neves, and G.B. Pardue. "Species Profiles: Life Histories and Environmental Requirements of Coastal Fishes and Invertebrates (Mid-Atlantic): Striped Bass." Study conducted by the Virginia Polytechnic Institute and State University Department of Fisheries and Wildlife Sciences for the Division of Biological Services, U.S. Fish and Wildlife Service, FWS/OBS-82/11.8. U.S. Army Corps of Engineers, TR EL-82-4. 1983.

Tomcod is an inshore species of cod that is distributed from southern Labrador to Virginia along the Atlantic Coast. Adults may spawn in marine waters but are typically anadromous and migrate into rivers and estuaries during late fall and winter to spawn. In New York Harbor Estuary waters, the adult tomcod move out from shore to cooler waters in the spring. These fish feed mainly on small crustaceans (Bigelow and Schroeder 1953).

Two of the common anadromous species are members of the herring family—alewife and American shad. These species live in the ocean as adults and move into estuaries in spring on their spawning migrations. Both spawn in freshwater. Juveniles migrate from the estuaries in their first year primarily in the fall. These species primarily eat small planktonic crustaceans and other invertebrates (Bigelow and Schroeder 1953).

CATADROMOUS SPECIES

The single catadromous species common to the Hackensack River is the American eel. Eels spawn in the Atlantic Ocean and the young move into the estuary as elvers in the spring, typically in February and March (Fahay 1978,[1] Sullivan et al. 2006).[2] American eels are opportunistic feeders and juveniles eat crustaceans, polychaetes, bivalves and fish. They grow slowly and at sexual maturity move down the estuary in the fall and out to sea (Bigelow and Schroeder 1953).

ECOLOGICALLY SENSITIVE AREAS

As previously stated, ecologically sensitive areas near the existing Portal Bridge include tidal and freshwater wetlands within the Meadowlands District. The FWS has designated the Meadowlands as a component of key priority habitat range for Atlantic flyway migratory waterfowl, and the USEPA has identified the areas in its list of New Jersey's priority wetlands. Although these designations have no regulatory authority, they highlight that these areas are considered important resources. As described above, the secondary study area includes approximately 271 acres of wetlands of various types exist within or in close proximity to the study area (NJDEP 2007). Despite the disturbed nature of these wetlands, these areas could provide suitable foraging habitat for a variety of colonial waterbirds and for other wildlife that utilizes emergent wetland areas during foraging, breeding, or for other purposes. Wetland areas immediately adjacent to the study area have been identified as potentially suitable foraging habitat for yellow-crowned night heron (NJDEP 2007).

The NJDEP maintains and allows access to various GIS-based databases through their iMap application. Part of this application includes a dataset of the Landscape Project, a pro-active, ecosystem-level approach to the long-term protection of rare species and their important habitats in New Jersey, including bald eagle foraging habitat, beaches, emergent or forested wetlands, urban peregrine falcon habitat, wood turtle habitat, and grasslands (NJDEP 2007). According to the NJDEP, the Landscape Project layers were created by intersecting endangered, threatened, and rare species data with the other applicable NJDEP data (NJDEP 2007). As such, using this data, the NJDEP can identify, delineate, and rank (based on the conservation status of species present) critical grassland habitat statewide. No habitats associated with the Landscape Project other than wetlands and a small section of urban peregrine falcon habitat is located within the study area.

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[1] Fahay, M.P. "Biological and fisheries data on the American eel, *Anguilla rostrata* (LeSeur)." NTIS PB-297 067. National Marine Fisheries Service Technical Series Report No. 17. 1978.

[2] Sullivan, M.C., K.W. Able, J.A. Hare and H.J. Walsh. "Anguilla Rostrata Glass Eel Ingress into Two U.S. East Coast Estuaries: Patterns, Processes and Implications for Adult Abundance." *Journal of Fish Biology* 69:1081-1101. 2006.

THREATENED AND ENDANGERED SPECIES

The New Jersey Landscape Project dataset does not identify threatened or endangered species within the project area. However, the dataset lists portions of the emergent wetlands within the project area as suitable habitat of priority concern for colonial water bird foraging. The northern edge of an area listed by the NJDEP's Landscape Project – Urban Peregrine Falcon (2002) as suitable foraging habitat for the State-endangered peregrine falcon is identified approximately 1,500 feet south of the project area (http://njgin.nj.gov/dep/DEP_iMapNJDEP/viewer.htm). The identified area is centered on PSEG Kearny Generating Station (apparent nesting site), and includes a foraging area with a radius of approximately 3,280 feet (1,000 meters). It is not known if this site (which is outside of the Portal Bridge's study area) is in current or continuous use by peregrine falcons; however, these raptors are common in urban areas, and nesting in New Jersey has been generally successful (NJDEP 2006). Additionally, in the summer of 2007, the first successful nesting of ospreys in the Hackensack Meadowlands in over 50 years was observed. Two juveniles fledged from a nest in Jersey City's Penhorn Creek area near the Hackensack River. For the second consecutive year (in the summer of 2008) the osprey had a successful nest in the Jersey City osprey tower, located along the banks of the Hackensack River. Three fledglings were observed from the nest. Because ospreys are exclusively piscivorous (i.e., fish-eating) the consecutive nesting successes have been hailed as a sign of improving water quality in the region (Hudson County 2007 and PSEG 2008, personal communications).

In addition, the following agencies were consulted regarding the presence or absence of threatened or endangered species (or other species of particular concern) within the project study area: National Oceanographic and Atmospheric Administration's (NOAA) National Marine Fisheries Service (NMFS) (Green 2007[1]); United States Fish and Wildlife Service (USFWS) (Staples 2007[2]); and New Jersey Department of Environmental Protection (NJDEP) Natural Heritage Program (Lord 2007[3]). Appendix C presents the coordination with these agencies, including responses regarding the presence or absence of threatened or endangered species. In a letter dated September 25, 2007, the NJDEP Natural Heritage Program confirmed a record for an occurrence of wafer-ash (*Ptelea trifoliata*) in the vicinity of the study area (see Appendix C). Habitat for the wafer-ash includes alluvial thickets, rocky slopes, and gravelly places. According to the NJDEP, this species was last officially documented in the area in 1997.

TERRESTRIAL

According to the New Jersey Audubon Society, more than 900 animal and plant species and 260 bird species have been reported or otherwise documented within the Meadowlands District (NJ Audubon 2007). Specifically, Kiviat and MacDonald have reported that species documented in the Meadowlands include over 260 birds (33 of which are state-listed as endangered, threatened, or declining), 22 mammals, over 51 fishes, 51 bees, and 420 plants (Kiviat and MacDonald 2004).[4] The Audubon Society's Christmas Bird Count, from December 2006 in Hackensack, New Jersey, resulted in sightings of 82 species including passerines, gulls, terns, shorebirds,

[1] Greene, K. Correspondence - Letter from National Marine Fisheries Service dated September 28, 2007.

[2] Staples, J. C. Correspondence - Letter from United States Fish and Wildlife Service dated February 2, 2007.

[3] Lord, H.A. Correspondence - Letter from New Jersey Department of Environmental Protection dated September 25, 2007.

[4] Kiviat, Eric and MacDonald, Kristi. "Biodiversity Patterns and Conservation in the Hackensack Meadowlands, New Jersey." *Urban Habitats.* Volume 2. December 2004.

raptors, herons, egrets, raptors, and waterfowl (Audubon Society 2006).[1] Table 5.6-4 below presents the results of this annual survey.

Table 5.6-4
Christmas Bird Count
Hackensack-Ridgewood, New Jersey
December 2006

Common Name	Category
Ring-billed Gull	Gulls, Terns, Shorebirds
Herring Gull	Gulls, Terns, Shorebirds
Great Black-backed Gull	Gulls, Terns, Shorebirds
Killdeer	Gulls, Terns, Shorebirds
Great Blue Heron (Blue form)	Herons and Egrets
Black-crowned Night-Heron	Herons and Egrets
Wild Turkey	Other
Common Grackle	Passerines
European Starling	Passerines
Red-winged Blackbird	Passerines
Mourning Dove	Passerines
White-throated Sparrow	Passerines
Dark-eyed (Slate-colored) Junco	Passerines
House Sparrow	Passerines
American Crow	Passerines
Blue Jay	Passerines
House Finch	Passerines
Tufted Titmouse	Passerines
Northern Cardinal	Passerines
American Robin	Passerines
American Goldfinch	Passerines
Downy Woodpecker	Passerines
Song Sparrow	Passerines
Black-capped Chickadee	Passerines
Monk Parakeet	Passerines
Red-bellied Woodpecker	Passerines
White-breasted Nuthatch	Passerines
Northern Mockingbird	Passerines
Carolina Wren	Passerines
Hairy Woodpecker	Passerines
Brown-headed Cowbird	Passerines
Fish Crow	Passerines
Fox Sparrow	Passerines
American Tree Sparrow	Passerines
Belted Kingfisher	Passerines
Northern (Yellow-shafted) Flicker	Passerines
Hermit Thrush	Passerines
Ruby-crowned Kinglet	Passerines
Eastern Bluebird	Passerines
Winter Wren	Passerines
Chipping Sparrow	Passerines
Yellow-bellied Sapsucker	Passerines
Swamp Sparrow	Passerines
Golden-crowned Kinglet	Passerines
Eastern Towhee	Passerines

[1] Audubon Society. Christmas Bird Count. Hackensack-Ridgewood, New Jersey. December 16, 2006.

Table 5.6-4 (cont'd)
Christmas Bird Count
Hackensack-Ridgewood, New Jersey
December 2006

Common Name	Category
Field Sparrow	Passerines
Red-headed Woodpecker	Passerines
Common Raven	Passerines
Brown Creeper	Passerines
Gray Catbird	Passerines
Cedar Waxwing	Passerines
Yellow-rumped (Myrtle) Warbler	Passerines
Savannah Sparrow	Passerines
Purple Finch	Passerines
Red-tailed Hawk	Raptors
Turkey Vulture	Raptors
Eastern Screech-Owl	Raptors
Bald Eagle	Raptors
Cooper's Hawk	Raptors
Great Horned Owl	Raptors
Sharp-shinned Hawk	Raptors
Peregrine Falcon	Raptors
Northern Harrier	Raptors
American Kestrel	Raptors
Common Merganser	Waterfowl
Canada Goose	Waterfowl
Ruddy Duck	Waterfowl
Mallard	Waterfowl
Green-winged Teal	Waterfowl
American Black Duck	Waterfowl
Wood Duck	Waterfowl
Double-crested Cormorant	Waterfowl
Lesser Scaup	Waterfowl
Hooded Merganser	Waterfowl
Northern Shoveler	Waterfowl
Ring-necked Duck	Waterfowl
Gadwall	Waterfowl
Bufflehead	Waterfowl
Pied-billed Grebe	Waterfowl
American Coot	Waterfowl
Mute Swan	Waterfowl
Greater White-fronted Goose	Waterfowl

Source: Audubon Society, 2007

Mammals documented by various sources in the Meadowlands include species common to the northeastern United States such as eastern cottontail *(Sylvilagus floridanus)*, white-footed mouse *(Peromyscus leucopus)*, meadow vole *(Microtus pennsylvanicus)*, common muskrat *(Ondatra zibethicus)*, Norway rat *(Rattus norvegicus)*, house mouse *(Mus musculus)*, and species of shrews and bats. Beaver *(Castor canadensis)* and white tailed deer *(Odocoileus virginianus)* have also been documented, although to a lesser extent. Most mammals that have been reported or otherwise documented within the Meadowlands are common, urban-tolerant species of wetlands or uplands. Species that are commonly considered to be sensitive to environmental conditions and changes, or pollution/contaminant sensitive species typically are not known to utilize the habitats of the Meadowlands (Kiviat and MacDonald 2002).[1] Reptiles documented

[1] Kiviat, E. and MacDonald, Kristi. *Hackensack Meadowlands, New Jersey, biodiversity: A review and synthesis*. Retrieved from Hackensack Meadowlands Partnership Web site: *http://meadowlandspartnership.org/bn.html* 2002.

within the Meadowlands include 8 species of snakes, and 6 species of turtles, including the locally common snapping turtle *(Chelydra serpentina)* and diamondback terrapin *(Malaclemys terrapin)*. 10 species of amphibians, including green frog *(Rana clamitans)* and Fowlers toad *(Bufo fowleri)* also have been documented within the Meadowlands District (Kiviat and MacDonald 2004).

AQUATIC ENVIRONMENT

SUBMERGED AQUATIC VEGETATION AND BENTHIC MARINE ALGAE

Submerged aquatic vegetation (SAV) consists of vascular aquatic plants that are often found in shallow areas of estuaries. These organisms are important because they provide nursery and refuge habitat for fish. Benthic algae are often large multicellular algae that serve as important primary producers in the aquatic environment. They are usually observed attached to rocks, jetties, pilings, and sandy or muddy bottoms (Hurley 1990).[1] Since these organisms require sunlight as their primary source of energy, the limited light penetration of the Hackensack River limits their distribution to shallow or intertidal areas. Light penetration, turbidity, and nutrient concentrations are all important factors in determining SAV and benthic algae productivity and biomass.

None of the studies reviewed as part of this assessment reported the presence of SAV in the Hackensack River, likely owing to high turbidities and attendant limited light penetration. Common macro-algae known to occur in Newark Bay include the Phaeophyte species *Fucus vesiculosus* as well as the Chlorophyte species *Ulva lactuca*. These species have a particular affinity for hard substrates within the photic zone, and are frequent colonists of pilings, rocks, bulkheads, and other structures. Freshwater input from the Hackensack and Passaic Rivers probably limits the occurrence of these species in the project area. The green alga genus *Enteromorpha* spp. probably occurs in the project area, especially as an epiphyte on emergent marsh grasses (Perlmutter 1971).

BENTHIC INVERTEBRATES

Invertebrate organisms that inhabit river bottom sediments and the surfaces of submerged objects (such as rocks, pilings, or debris) are commonly referred to as benthic invertebrates. These organisms are important to an ecosystem's energy flow because they convert detrital and suspended organic material into living tissue; moreover, they are also integral components of the diets of ecologically and commercially important fish and waterfowl species. Benthic invertebrates are also essential in promoting the exchange of nutrients between the sediment and water column. Benthic invertebrates include those specimens that can be retained on a 0.5 mm screen (defined as macroinvertebrates) as well as smaller forms, such as nematodes (a class of roundworm) and harpacticoid copepods (order of copepods that are primarily benthic), collectively called meiofauna. Some of these animals live on top of the substratum (epifauna) and some within the substratum (infauna). Substrate type (rocks, pilings, sediment grain size, etc.), salinity, and dissolved oxygen (DO) levels are important factors influencing benthic invertebrate communities; other factors include currents, reproductive success, larval distribution, wave action, predation, succession, and disturbance.

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[1] Hurley, L.M. *Field Guide to the Submerged Aquatic Vegetation of Chesapeake Bay.* U.S. Fish and Wildlife Service, Chesapeake Bay Estuary Program, Annapolis, MD. 1990.

A survey of benthic macrofauna of Newark Bay in 1993 and 1994 used benthic grab sampling to assess the composition and abundance of benthic organisms (Stehlik et al, 2005).[1] This survey collected data from a station located in the mouth of the Hackensack River (Station B1). Common organisms (either by abundance or by mass) included the soft-shell clam (*Mya arenaria*), the blue mussel (*Mytilus edulis*), the tunicate *Mogula manhattensis*, the polychaete worms *Streblospio benedicti* and *Tharyx* spp., and the estuarine bivalve *Macoma balthica*, among many others. Annelid and oligochaete worms were also abundant in samples, as were various crustaceans (e.g., isopods). A survey of benthic invertebrates in the Riverbend Wetlands Preserve in 2003 yielded *Macoma balthica*, the burrowing anemone Edwardsia elegans, several polychaete, isopod, and amphipod species, and the snail *Spurwinka salsa* (ENSR 2004).

Inferences about the types of benthic invertebrates present in an area can also be made by examining the diets of fish that prey upon them. For example, Neuman et al. (2004)[2] examined the food habits of white perch, striped bass, and bluefish in the Hackensack Meadowlands from marshes approximately five miles upriver of the project area. These investigators documented a very similar mix of species in the stomach contents of these fish, as well as blue crab (*Callinectes sapidus*), grass shrimp (*Palaemonetes pugio*), Mysid shrimp (mainly *Neomysis americana*), *Gammarus* amphipods, Chironomid larvae, and mud snails (*Ilyanassa obsoleta*), among others. While the relative abundances of these invertebrates is unknown due to differences in feeding habits between fish species and many other variables, this list is indicative of the kinds of species that may be present in the project area.

D. NO ACTION ALTERNATIVE

As described in Chapter 3, "Project Alternatives," the No Action Alternative would not include the replacement of the Portal Bridge but would include several regional transportation projects that are expected to be completed by 2030. In addition, there are several other planned projects that are aimed at improving water quality, aquatic resources, and wetlands in the project study area. These projects will likely be completed before the 2030 analysis year and are discussed below. In addition, the trend of improvement in regional sediment quality is expected to continue.

NEW YORK/NEW JERSEY HARBOR ESTUARY PROGRAM PROJECTS

The waterbodies in the project study area, namely the Hackensack River and associated tidal wetlands, are located within the region encompassed by the New York/New Jersey Harbor Estuary Program (NY/NJ HEP). In 1987, the NY/NJ HEP was authorized by the USEPA as part of the National Estuary Program. The program is a multiyear effort to develop a plan to protect, conserve, and restore the estuary.

Several of the future water quality improvement efforts in the project study area will be coordinated by the NY/NJ HEP. As discussed under existing conditions, the Final CCMP (NY/NJ HEP 1996) for the NY/NJ HEP included a number of goals to improve water quality and aquatic resources in the project study area. To meet these goals, the CCMP outlines

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[1] Stehlik, L.L., S.J. Wilk, R.A. Pikanowski, D.G. McMillan, and E.M. MacHaffie. "Benthic Macrofauna and Associated Hydrographic Observations Collected in Newark Bay, New Jersey between June 1993 and March 1994." Northeast Fisheries Science Center Reference Document 05-07. 2005.

[2] Neuman, M.J., G. Ruess, and W. Able. "Species Compositions and Food Habits of Dominant Fish Predators in Slat Marshes of an Urbanized Estuary, the Hackensack Meadowlands, New Jersey." *Urban Habitats*, Vol. 2, No. 1. pp. 62-82. 2004.

objectives for the management of toxic contamination, dredged material, pathogenic contamination, floatable debris, nutrients and organic enrichment, and rainfall-induced discharges. Most of these objectives aim to increase knowledge of the nature and extent of various forms of pollution, reduce inputs of these pollutants, and increase the habitat and human use potential of the Harbor area.

The Interstate Environmental Commission (IEC) and the New York/New Jersey Clean Ocean and Shore Trust (COAST) are also vested in the area's environmental welfare. IEC is a tri-state (New York, New Jersey, and Connecticut) water and air pollution control agency (IEC 2005). The Clean Ocean and Shore Trust is a legislative committee aimed at maximizing the ecological, economic and scenic resources of the Hudson-Raritan Estuary and New York Bight.

NJDEP PROJECTS

The New Jersey Toxics Reduction Workplan (NJTRWP) includes a series of studies and investigations of the New York-New Jersey Harbor estuary system. The data collected is designed to provide the NJDEP with the information it needs to meet two primary objectives. The first objective is to identify sources of toxic chemicals of concern and to prioritize these sources for appropriate action. The second object is to identify selected contaminated sediments for future remediation and restoration activities. Presently, Phase One of the NJTRWP has been completed and includes monitoring studies of selected ambient water quality and suspended sediment parameters throughout various tributaries to the Newark Bay Complex, the Arthur Kill, and Raritan Bay.

The NJDEP Site Remediation Program also addresses chemical contamination problems facing New Jersey waterways. It was created in response to growing concerns over health and environmental risks posed by contaminated sites and to aid in overseeing the Superfund program for the State (NJDEP 2007). Many sites in Kearny and Secaucus are undergoing different phases of remediation and remediation investigation. For example, three sites undergoing remediation investigation include the former Diamond Shamrock, Standard Chlorine, and Koppers Coke sites (see Chapter 5.7, "Contaminated Materials").

ACOE NAVIGATION PROJECTS

The New York District ACOE, in conjunction with PANYNJ and other local governments, has several navigation projects planned in the Harbor Area (USACOE 2001) that have the potential to affect water quality through the removal of existing sediment and deposition of sediment during the dredging process.

In the 1999 Final EIS for the New York and New Jersey Harbor Navigation Study, the ACOE concluded that the primary adverse environmental impact of the navigation improvements contained in the recommended plan would be the loss of shallow water habitat (6.27 acres of shallow subtidal and 42.52 acres of deeper subtidal habitat) which would be mitigated through shoreline protection measures and the protection and restoration of wetlands within the Harbor Estuary. Benthic fish and invertebrates in the immediate area of channel deepening activities will be impacted. Fish and invertebrates that cannot move out of the construction area may be lost. However, the ACOE (1999c) concluded that the loss of some individuals is expected to be temporary because of the tendency for benthic organisms to rapidly repopulate a disturbed area. Because of habitat changes from shallower to deeper habitats, permanent changes in fish and benthic invertebrate community composition may occur (ACOE 1999c).

GENERAL ELECTRIC PCB REMOVAL

Upstream from the Harbor, the USEPA has ordered General Electric to remove sediments from a 40-mile stretch of the upper Hudson River from Fort Edward downstream to the Federal Dam at Troy. The sediments were contaminated with PCBs from the GE plants in Hudson Falls and Fort Edward between 1947 and 1977. The proposed sediment removals are currently scheduled to take place in the next five to ten years and may have the potential to affect sediment quality in the Harbor as sediments are resuspended in the water column during the dredging process.

WETLANDS AND WILDLIFE

As described in Chapter 5.1, "Land Use and Social Conditions," NJMC seeks to preserve and enhance the existing 8,400-acres of wetlands in the district with the intent of providing full public ownership. To fulfill this objective, NJMC plans to acquire additional wetlands from the NJDEP Bureau of Tidelands and the State of New Jersey. These efforts will be ongoing and some may be completed by the 2030 analysis year. The NJMC is presently involved with the preservation and enhancement of twelve wetlands in the District that are at various phases of development. Some examples of restoration goals of these projects include the creation of specific habitats, control of invasive species, reintroduction of native species, and the restoration of hydrology. Three of these wetlands are located in the vicinity of Portal Bridge in the southern section of the Meadowlands District, namely the Riverbend Wetlands Preserve, the Kearny Brackish Marshes, and the Kearny Freshwater Marsh. The projects include the control of invasive *Phragmites* and restoration of wetland hydrology. The Kearny Freshwater Marsh project also consists of the removal and disposal of contaminated surface soils. These aggressive management practices will create more desirable habitat for water fowl and fish species.

In addition, as discussed in Chapter 5.1, Hudson County and the NY/NJ Baykeeper recently acquired a 14.9-acre parcel south of the New Jersey Turnpike for expansion of the park. NJMC, in partnership with Hudson County and the New York-New Jersey Baykeeper, has plans for wetland restoration in this parcel and in the existing park. The plans include restoration of up to 2 acres of shoreline in the existing park to encourage fish and recreational catch-and-release fishing. In the expansion parcel, plans include grading of the 14.9 acres of wetland to support marsh grass growth and wildlife, and a new boardwalk and fishing pier along the shoreline. The waterfront walkway in Laurel Hill Park is planned to be extended beneath the New Jersey Turnpike into this new expansion parcel. There is no planned completion date for the Laurel Hill Park improvements and expansion.

Overall, the acquisition and restoration of these sites and future sites should enhance the wetland system, which incorporates the aquatic and terrestrial habitats available to wildlife within the Meadowlands District.

E. PROBABLE IMPACTS OF THE BUILD ALTERNATIVES

As discussed in Chapter 3, "Project Alternatives," four feasible build alternatives (Alternatives FE, FS, DE, and DS) have been identified and Alternative DS is the preferred alternative. Since the project elements are similar for each of these four alternatives (e.g., two new Hackensack River bridges, decommissioning of existing Portal Bridge, new bridges over existing roads and rail rights-of-way), the types of ecological impacts expected from the proposed project would be generally the same. The magnitude and extent of the permanent ecological impacts would, however, vary depending upon the alternative selected. (An assessment of temporary ecological

impacts anticipated during the construction of the proposed project is presented in Chapter 6, "Construction Impacts"). This section therefore first presents a discussion of the types of ecological impacts expected from the proposed project and is followed by a quantitative comparison of the four build alternatives.

ESSENTIAL FISH HABITAT

Essential Fish Habitat (EFH) is defined under the Magnuson-Stevens Fishery Conservation Management Act (16 USC §§ 1801 to 1883), as amended by the Sustainable Fisheries Act (SFA) of 1996, as "those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity." Adverse effects to EFH, as defined in 50 CFR 600.910(A) include any impact that reduces the quality and/or quantity of EFH. Adverse effects may include:

- Direct impacts such as physical disruption or the release of contaminants;
- Indirect impacts such as the loss of prey, reduction in the fecundity (number of offspring produced) of a managed species; and
- Site-specific or habitat-wide impacts that may include individual, cumulative, or synergetic consequences of a Federal action.

Table 5.6-5 lists the species for which EFH has been designated in the estuary of Hudson River / Raritan Bay / Sandy Hook Bays in New York and New Jersey, The proposed action is located within the mixing zone (M) of the estuary. A full analysis of EFH species, their habitats, and potential impacts is provided in Appendix C.

Table 5.6-5
Essential Fish Habitat

Species	Eggs	Larvae	Juveniles	Adults	Spawning Adults
Red hake *(Urophycis chuss)*		M,S	M,S	M,S	
Winter flounder *(Pleuronectes americanus)*	M,S	M,S	M,S	M,S	M,S
Windowpane flounder *(Scopthalmus aquosus)*	M,S	M,S	M,S	M,S	M,S
Atlantic herring *(Clupea harengus)*		M,S	M,S	M,S	
Bluefish *(Pomatomus saltatrix)*		_	M,S	M,S	
Atlantic butterfish *(Peprilus triacanthus)*		M	M,S	M,S	
Summer flounder *(Paralicthys dentatus)*		F,M,S	M,S	M,S	
Black sea bass *(Centropristus striata)*		_	M,S	M,S	
King mackerel *(Scomberomorus cavalla)*	X	X	X	X	
Spanish mackerel *(Scomberomorus maculatus)*	X	X	X	X	
Cobia *(Rachycentron canadum)*	X	X	X	X	
Clearnose skate *(Raja eglanteria)*			X	X	
Little skate *(Leucoraja erinacea)*					
Winter skate *(Leucoraja occelata)*					

Note:
Freshwater Zone (F), Mixing zone (M), Saltwater Zone (S)

The potential effects of project construction on the EFH and measures to avoid, minimize or mitigate any adverse impacts including timing restrictions on in-water activities to protect anadromous fish spawning are discussed in Chapter 6 of the FEIS. Similarly, the operational effects of the build alternatives, including potential adverse effects from increased shading are discussed below.

AQUATIC IMPACTS

Four types of potential permanent impacts to the aquatic ecosystem were assessed:

- Loss of benthic habitat from in-water caissons, pile footprints, embankments, and retaining walls;
- Shading of benthic habitat from new overhead structures;
- Potential obstruction to fish migration;
- Potential radiated noise/vibration into estuarine waters.

These types of aquatic impacts are discussed below.

LOSS OF BENTHIC HABITAT

As discussed in Chapter 6, "Construction Impacts," the two new Hackensack River bridges and several of the structures needed to traverse existing roads and rail rights-of-way would require the installation of caissons and/or piles in wetland and open water areas, along with embankments and retaining walls. A typical bridge pier section relative to the water line and mud line is shown in Figure 6-7. The area of direct loss of benthic habitat would be relatively small compared to the availability of such habitat in adjacent waters. Within the areas of benthic habitat permanently occupied by support structures, impacts to sessile and infaunal benthic invertebrates would be expected. The direct loss of these organisms would have a highly localized effect, and would not be expected to result in significant adverse impacts to fish and other aquatic organisms for several reasons. First, the area of impact to benthic habitat (described below) would be orders of magnitude less than the areas of adjacent equivalent habitat. Second, estuarine benthic invertebrates typically have evolved short times to maturity, high fecundities, and widely dispersed juvenile stages in response to the variable nature of their environment (Brey 2001). The estuarine environment is highly dynamic, and shifts in habitat type can occur rapidly (Brey 2001). On a population level, estuarine benthic invertebrates are well-adapted to responding to localized stresses or even losses of individuals. Lastly, the bridge support caissons and/or piles would increase habitat complexity in the area, providing attachment surface for the estuarine fouling community (including barnacles, mussels, hydroids, algae, tunicates, etc.) and would essentially serve as an artificial reef habitat. This increased complexity can serve as an additional ecological niche within the project area, offering novel opportunities for foraging that would partially mitigate for the loss of benthic habitat. In addition, the removal of the existing Portal Bridge and associated piers, piles, and fenders would be removed to or below the mudline, thereby creating new benthic habitat that would be rapidly colonized by benthic invertebrates. The recoverable benthic habitat associated with this removal ranges from a minimum of 0.04 acres of bottom (assuming that only timber piles penetrate the substrate) to 0.57 acres (assuming that the existing mudline extends up into the area covered by pier structure).

SHADING OF BENTHIC HABITAT BY OVERHEAD STRUCTURE

The proposed new bridges would increase the area of overwater coverage and the associated shading of aquatic habitat within the project site. It has been suggested that shading of estuarine habitats can result in decreased light levels, which can lower productivity of primary producers and adversely affect invertebrates, and fish that use these areas particularly with respect to use as foraging habitat (Able et al. 1995, Able et al. 2006). The amount of additional overwater shading for each build alternative is discussed in detail below. However, given the changing daily and

seasonal angles of solar illumination, light would be expected to reach the water under these structures during substantial portions of the day, reducing potential impacts to aquatic biota due to shading. Additionally, the generally high turbidities on the Hackensack River limit any effect of the additional shading to the first few feet of the water column—benthic communities would be relatively unaffected by the increase in shaded habitat. Thirdly, because the tidal currents under the bridge(s) are strong and the bridge structure(s) would be comparatively narrow, plankton would be expected to move through the project site quickly and would not be expected to be adversely impacted by shading from the proposed project. Lastly, as described above, the piers, piles, and fender projections associated with the existing bridge rests would be removed to or below the mudline, thereby creating benthic habitat that will be rapidly colonized by benthic invertebrates.

POTENTIAL OBSTRUCTION TO FISH MIGRATION

In-water structures can serve as barriers to fish migration, especially when these structures create significant areas of turbulence, cause a rapid change in hydraulic head, or physically restrict passage to a large degree (USACOE 1991). Typically, these types of obstructions (or restrictions) are found in flowing rivers blocked by hydroelectric dams, low-head weirs, or culverts. In the case of the build alternatives, the width of the navigable channel would be increased from two 99-foot-wide channels to a single 300-foot-wide channel, with substantial additional open water areas between caissons. These wide passages are not expected to hamper fish movements due to the effects of the structures in the water.

POTENTIAL RADIATED NOISE/VIBRATION INTO ESTUARINE WATERS

Anthropogenic noise in the estuarine environment can have an impact on aquatic organisms under certain conditions. Lethal and sub-lethal effects can be caused by sound levels of sufficient energy to cause soft-tissue damage, and behavioral effects can be caused by underwater sounds on those species evolved to detect them (Hastings and Popper 2005). In many cases, such as those involving pile driving, dredging, offshore wind farms, and vessel operation, the effects of these sounds are beginning to be understood (Vella et al 2001). The sound radiated by bridges is less well-understood. A number of factors drive the sound intensity and frequency range radiated into the aquatic environment, including but not limited to bridge design and construction approach, materials, degree of coupling to the water column, typical uses, and water depth (Hazelwood 1994).

Although the degree and effect of radiated noise from the Portal Bridge on the ecology of the Hackensack River is largely unknown, this noise must be considered in a regional context. Many other sources of natural and anthropogenic sounds exist in the New York Harbor Estuary, one of the largest commercial ports in the Western Hemisphere. Fish moving through the estuary will encounter an acoustic environment that is far noisier than any that might occur in the region of the Portal Bridge. The sound levels in the estuary result from the presence of shipping associated with numerous deep draft shipping terminals. While noise levels from shipping in the estuary are not available, it is possible to get a first approximation based upon sound levels from other locations. A recent study in Hong Kong harbor demonstrated that there was a generally high noise level in the area (Würsig and Green 2002). The highest sound levels recorded in that study (approximately 110 to 150 dB) were associated with ship propellers. The sound from a single vessel is above hearing thresholds of fishes approximating those in the estuary and would potentially be detectable to a fish within 50 or 100 meters of the propeller (see Appendix C for more detail). Due to the substantial noise (from ships as well as other sources) already present in the Harbor Estuary, the radiated noise from the operation of Portal Bridge is expected to be comparatively small.

Furthermore, discounting potential differences in bridge design, the build alternatives are not expected to radiate substantially more sound into the water than the existing bridge.

WETLAND IMPACTS

Three types of permanent wetland impacts would be expected from the build alternatives:

- Permanent loss of wetland habitat within caissons and/or pile footprints and from embankments and retaining walls;
- Shading of wetland habitat from new overhead structures;
- Potential fragmentation of wetland habitat.

PERMANENT LOSS OF WETLAND HABITAT

The permanent loss of wetlands in the form of wetlands fill would be expected due to the installation of bridge support caissons/piles and creation of new embankments. The estimated acreage of permanent wetland loss for each alternative are discussed below in Table 5.6-6. Between the DEIS and the FEIS, the wetland impacts have been refined in several respects as follows:

- The fill in the wetlands on the east bank of the Hackensack River for the approach structures has been revised to account for the actual pier design that will be used to support the these elevated structures. In the DEIS, it was conservatively assumed that the footprint of the entire track structure would constitute a fill for the purposes of determining impacts on adjacent wetlands. The revised analysis accounts for the actual area of wetland to be filled due to the placement of piers to support the elevated structure.
- The shading estimates were refined by taking into account the width of the proposed structure and its height above the ground elevation to more accurately depict these impacts.
- The permanent access road for the southern bridge in Alternatives DS and FS was moved from the Riverbend Wetland Preserve to the existing Northeast Corridor embankment, resulting in a reduction in impacts for these alternatives. A temporary access road/construction platform would still be required in the Riverbend Wetland Preserve to allow for construction of the elevated structure. As discussed in Chapter 5.1, the Riverbend Wetland Preserve is a 58-acre tidal marsh that NJMC purchased for preservation in 1998 as part of a U.S. Army Corps of Engineers (ACOE) approved wetlands mitigation plan for the Teterboro Airport.
- The embankment for Alternatives DE and FE on the east side of the Hackensack River was widened to allow a new permanent access road to be constructed in lieu of the road that would be lost from increasing the elevation of the current embankment. This resulted in a slight increase in wetland impacts for these alternatives.

As shown in Table 5.6-6, the changes resulted in a substantial reduction in the project's impact on wetlands, both from a fill and shading perspective. For all build alternatives, potential impacts to open water decreased slightly while the impacts to benthic habitat remain essentially unchanged since the DEIS.

As shown in the table, the potential impacts to wetlands from the four build alternatives has been reduced from those previously discussed in the DEIS. The most substantial decrease in potential wetlands impacts is with Alternatives DS and FS. As discussed in the DEIS, total potential impacts to wetlands was 13.1 and 12.3 acres for Alternatives FS and DS, respectively. The

changes discussed above substantially reduced the total potential wetland impacts for these alternatives by approximately 6.7 acres. Based on the current designs, the estimated wetland impact for Preferred Alternative DS has been reduced to 5.7 acres while Alternative FS is estimated to impact 6.4 acres. The difference in permanent impacts to wetlands from the placement of fill between Alternatives DS and DE is estimated to be approximately 0.3 acres, as compared to the 3.9 acres shown in the DEIS. The difference between Alternative FE and FS is approximately 0.4 acres, whereas the difference was 4.0 acres in the DEIS. Most of the change has occurred in the area of the Riverbend Wetland Preserve on the east side of the Hackensack River south of the existing Northeast Corridor right-of-way. As described above, the two major issues contributing to that reduction in impacts is the relocation of the permanent access road and the use of elevated structure within the preserve.

Table 5.6-6
Probable Impacts on Wetlands, Open Water, and Benthic Habitat (in acres)

		Section 1	Section 2	Section 3*	Section 4**	Section 5***	Section 6	Section 7	Total
DS	Wetlands	0.81 (A)	-	1.59 (B)	0.7 (C)	-	2.43 (D)	0.19 (E)	**5.72**
	Benthic Habitat	-	-	0.03	-	0.08	-	-	**0.11**
	Open Water	-	-	0.17	-	0.62	-	-	**0.79**
	Shading	-	-	0.86	-	-	0.85	0.24	**1.95**
DE	Wetlands	0.81 (A)	-	1.59 (B)	0.7 (C)	-	2.23 (D)	0.07(E)	**5.4**
	Benthic Habitat	-	-	0.03	-	0.08	-	-	**0.11**
	Open Water	-	-	0.17	-	0.62	-	-	**0.79**
	Shading	-	-	0.86	-	-	0.41	0.24	**1.51**
FE	Wetlands	1.45 (A)	-	1.61 (B)	0.7 (C)	-	2.23 (D)	0.07 (E)	**6.06**
	Benthic Habitat	-	-	0.04	-	0.08	-	-	**0.12**
	Open Water	-	-	0.17	-	0.62	-	-	**0.79**
	Shading	-	-	0.81	-	-	0.41	0.24	**1.46**
FS	Wetlands	1.5 (A)	-	1.61 (B)	0.7 (C)	-	2.43 (D)	0.19 (E)	**6.43**
	Benthic Habitat	-	-	0.04	-	0.08	-	-	**0.12**
	Open Water	-	-	0.17	-	0.62	-	-	**0.79**
	Shading	-	-	0.81	-	-	0.85	0.24	**1.9**

Notes:
* Section 3 includes bridge structures over the western lagoon
** Section 4 includes bridge structures over Kearny Brackish Marsh
*** Section 5 includes bridge structures over Hackensack River
(A) Wetlands in this section consist primarily of deciduous scrub/shrub wetlands, and open water.
(B) Wetlands in this area consist of *Phragmites*-dominated interior wetlands, and open water.
(C) Wetlands in this area consist of herbaceous wetlands and open water.
(D) Wetlands in this area consist of *Phragmites*-dominated coastal wetlands.
(E) Wetlands in this area consist of herbaceous wetlands.

The impact assessment on wetlands by habitat type has been added to the FEIS and is summarized below for each build alternative in Table 5.6-7. These losses would include open water, deciduous scrub/shrub wetlands, *Phragmites*-dominated interior wetlands, *Phragmites*-dominated coastal wetlands, and herbaceous wetlands. Impacts to different wetland habitats vary slightly with each alternative, with the greatest differences on the deciduous scrub/shrub wetland impacts between Alternatives FE/FS and DS/DE. The potential impact to the deciduous scrub/shrub wetlands is approximately 0.81 acres with Alternatives DS or DE, whereas Alternatives FE and FS would potentially impact 1.45 to 1.5 acres, respectively. These impacts are located in the

Cedar Creek Marsh area and are related to the wider alignment required for the fly-over alternatives. With either Alternative FE or FS, there would be an additional increase of 0.64 to 0.69 acres of impacts to the deciduous scrub/shrub wetland habitat.

Differences in wetland impacts to *Phragmites*-dominated coastal and interior wetland habitat and herbaceous wetland habitat are minimal between the four alternatives. There would be 0.02 acres less impacts to *Phragmites*-dominated interior wetlands with Alternatives DS and DE. Alternatives FS and DS would have greater impacts on *Phragmites*-dominated coastal wetlands and herbaceous wetlands (0.2 and 0.12 acres, respectively) when compared with Alternatives FE and DE.

Table 5.6-7
Probable Impacts on Wetland Habitat Type (in acres)

	DS	DE	FE	FS
Deciduous scrub/shrub wetlands	0.81	0.81	1.45	1.5
***Phragmites*-dominated interior wetlands**	1.59	1.59	1.61	1.61
***Phragmites*-dominated coastal wetlands**	2.43	2.23	2.23	2.43
Herbaceous wetlands *	0.89	0.77	0.77	0.89
TOTAL	**5.72**	**5.40**	**6.06**	**6.43**

Notes:
* The total includes probable wetland impacts in Sections 4 and 7.

As described above, a small portion of the project area lies within regulated wetland buffer area. Due to the highly developed nature of the project site and study area with a number of linear features—such as rail tracks, paved access roads, utility rights-of-way, and man-made earthworks—the value of the wetland buffer areas is low. For purposes of this impact assessment, any natural areas adjacent to wetlands were conservatively included in the total wetland impact area. The presence of wetland buffers that could be impacted by the proposed project will be confirmed during the permitting process and the need for mitigation measures will be coordinated with the project stakeholders.

The potential for temporary effects on wetlands during the construction period are discussed in Chapter 6, "Construction Impacts."

SHADING OF WETLAND HABITAT BY OVERHEAD STRUCTURE

The effects of shading on emergent and saline wetlands vary according to the degree of shading. Factors influencing shading include the width and height of the overhead obstruction, as well as the directional orientation of the shading structure. Depending on the amount of shade involved, impacts to vegetation can range from no discernable effect to complete loss of vegetation. In addition, even minor changes to the degree of shading to a wetland area can potentially improve the competitive advantage of invasive species over natives (Weihe and Neely 1997) or exacerbate other stressors such as water-logging (Lenssen et al 2003), wherein wetland plants are negatively affected by an excess of water. Additionally, shading may adversely affect, or be exploited by, certain fauna that occupy wetland habitats.

The effects of structure-induced light attenuation on aquatic habitats are beginning to be understood as an important anthropogenic environmental stressor. In shallow or intertidal benthic habitats, for example, limited light availability has been observed to limit primary productivity (Struck et al 2004), and to affect the composition of fish communities within shaded areas (Able et al 1995). Furthermore, the general effects of shading on emergent tidal wetland vegetation are reasonably well documented (e.g. Pezeshki et al 1996).

While qualitative effects of shading are widely known, there has been little apparent effort in broad-based development of objective standards by which the structural parameters of an overhead structure (e.g. height to width ratios, directional orientation, effective opacity, etc.) are correlated to environmental impact. In two recent research projects, however, steps to establishing a threshold value for height to width (HW) ratios have been taken (Struck 2004, Sanclements 2003). Both studies were conducted in marshes shaded by highway bridges and in adjacent reference sites in North Carolina. Both studies present data that support a HW ratio of 0.7 as a threshold for impacts, below which impacts were statistically significant. Overhead structures with a HW ratio greater than 0.7 did not appear to result in substantial shading impact to the underlying marsh.

Since this ratio was developed from studies in marsh systems with vegetative and faunal community structures similar to those of the Hackensack Meadowlands, and because the HW ratio for vegetation and faunal appear to converge on a common ratio, this value was used for estimating wetland shading impacts from the proposed project. The estimation of shading effects relies on this value, as well as the widths, heights, and lengths of proposed structures, to calculate an estimate of newly shaded area. Although the actual shaded area will vary by time of year, time of day, and the north/south orientation of the span, these variables are implicit in the 0.7 HW ratio threshold recommended in the studies above.

The shading impacts have been revised for the FEIS. As shown in Table 5.6-6, in some areas, the potential impacts from shading have increased while in others they have been reduced. For the higher structures, such as the two main crossings of the Hackensack River, it has been determined that there would be no impacts due to shading. On the east bank of the Hackensack River, potential shading impacts are now being considered where the height above the ground surface is less than 70 percent of the width of the structure. Therefore, a portion of the approach viaducts that were considered to constitute a "fill" in the DEIS are now considered shading impacts in the FEIS. However, the overall potential adverse impacts from shading of open water and wetland areas have been substantially reduced.

POTENTIAL FRAGMENTATION OF WETLAND HABITAT

Another potential impact to wetland areas involves the fragmentation of contiguous habitat. Habitat segmentation can occur when a linear development isolates one or more areas of contiguous habitat. The effects of fragmentation can range from the reproductive isolation of sub-populations of affected plants and animals to loss of refuge or breeding habitat associated with habitat interior regions. In the United Kingdom, researchers found that fragmented wetland habitat severely constrained the dispersal limits of threatened gastropod mollusks (Niggebrugge et al. 2007). The genetic consequences of wetland habitat fragmentation are not well understood; however, the authors caution that even small genetic consequences can be critical to threatened or endangered species limited to particular habitats. In New England, wetland habitat partitioning was found to have a negative effect on salt marsh bird diversity, with fragmented habitats having significantly lower species richness than larger contiguous marsh areas (Shriver et al. 2004). This

general finding is consistent with other similar studies in forest, grassland, and freshwater wetland communities. Habitat fragmentation also leads to an increase in habitat "edge" density. Habitat edge is the boundary between on type of monotypic habitat and another. In natural settings, where one habitat type transitions into another, these edges are often called "ecotones," and are though to represent areas of high biological diversity and abundance (Johnston and Odum 1956). In human-impacted environments; however, the edges are often abrupt when they are caused by a linear development feature (e.g., the edge of an agricultural field, a railroad, electrical transmission lines, etc.). The increased fragmentation of these habitats by man-made features can lead to an overabundance of edge, with potentially deleterious effects. As one example, while proximity to edge habitat has been observed to be beneficial to nesting birds, the presence of edge also increases predation by providing access to interior regions of forests used by prey and by serving as corridors for movement (Gates and Gysel 1978, Johnston and Odum 1956). A more recent study of nesting ducks in mid-west marshes failed to document increased predation as a function of edge proximity; however a preference for nesting sites near the wetland edge (within the wetlands) was observed for several duck species (Pasitschniak-Arts et al. 1998). Nevertheless, such a preference for edge could increase vulnerability to predation given a different predator mix or a higher degree of habitat fragmentation (i.e., a higher edge to area ratio).

TERRESTRIAL IMPACTS

According to the NJDEP, regions within the project area have been identified as colonial waterbird foraging habitat (Lord 2007). Areas within one half-mile of the project have been identified as potentially containing American coot (state status: declining species), peregrine falcon (state status: endangered species), and pied-billed grebe (state status: endangered/stable species). With the exception of peregrine falcons, the species identified are primarily wetland species but may occupy upland fringe areas. Furthermore, the terrestrial areas within the project alternatives are already developed with rail rights-of-way, roads, utility infrastructure, and industrial facilities. These areas have relatively little value as terrestrial habitat, and as such, permanent impacts to terrestrial natural resources are expected to be minor. The operational impacts of the proposed project could result in increased development and/or shading of terrestrial areas in proportion to each alternative's areal footprint. Lastly, changes in location of rail traffic and associated noise could have a minor impact on local reptile, bird, and mammal reproduction, foraging, and movement, although this impact is only incrementally more than that of existing uses. The presence or absence of habitats or species not previously identified will be confirmed by field biologists' reconnaissance once a preferred alternative is selected and engineering design has sufficiently progressed. The potential for adverse impacts to terrestrial resources during the construction period is assessed in Chapter 6, "Construction Impacts."

As stated above, the NJDEP Natural Heritage Program confirmed a record for an occurrence of wafer-ash (*Ptelea trifoliata*) in the vicinity of the study area but outside the boundaries of the project site. Habitat for the wafer-ash includes alluvial thickets, rocky slopes, and gravelly places. This species was last officially documented in 1997, in a location that would not be disturbed as part of the proposed project activities. As such, no adverse impacts to wafer-ash would occur from the proposed project.

WATER QUALITY

The build alternatives would not result in any long-term adverse effects to water quality or stormwater in the study area. Most of the proposed project elements would be pervious—including new rail embankments and the open deck moveable bridge—and would therefore not

affect stormwater percolation. Some project elements, including the concrete deck on the new fixed bridge, would be impervious. Direct discharges of stormwater to surface waters would be avoided through implementation of a stormwater collection system for these structures. Stormwater would be rerouted through nearby wetlands to control stormwater pollutant loadings to nearby surface waters. The additional in-water structures, when considered in conjunction with the removal of the existing pivot pier, would not alter the flow characteristics of the Hackensack River. As explained in Chapter 3, the existing submarine cable that traverses the Hackensack River would be severed at each end and abandoned in place, thereby preventing sediment disturbance and water quality impacts. A new cable would be installed on the moveable bridge itself, rather than being installed underwater. The potential for the build alternatives to result in short-term adverse impacts to water quality from construction activities is discussed in Chapter 6, "Construction Impacts."

FLOODPLAINS

All build alternatives would require construction in the 100-year floodplain since the existing right-of-way is, for the most part, surrounded by floodplain. FRA guidance requires an evaluation of alternatives that would affect a base floodplain, including the risks associated with the alternative; the impacts on natural and beneficial floodplain values; the degree to which the alternatives support incompatible development in the base floodplain; and the adequacy of the methods proposed to minimize harm.

All alternatives would require construction in the 100-year floodplain along the existing right-of-way, particularly to the north. These areas include:

- The area between the New Jersey Turnpike and the west shore of the Hackensack River; and
- The area between the east shore of the Hackensack River and the Boonton Line.

Since the current Northeast Corridor right-of-way is on an embankment that is outside the 100-year floodplain, the only alternative that would not require any construction in the floodplain is the No Action Alternative. For a build alternative to avoid encroaching on the floodplain, it would have to be constructed along the existing right-of-way without increasing the toe-of-slope for the embankment area. This is not feasible if: (1) a higher bridge is desired, and/or (2) additional tracks are required. Since both of these criteria are necessary to meet the project goals and objectives as defined in Chapter 2, "Project Purpose and Need," the encroachment within the floodplain cannot be avoided.

To minimize the risks associated with this construction, the project alternatives have been developed to maximize the use of elevated structures and retaining walls rather than using filled embankment in a large portion of the project area. While this increases the project costs, substantial ecological benefits accrue to both wetlands and floodplain resources. These additional structures include 1,600 feet of bridges (for Alternative DE and Alternative FE) and 3,600 feet of bridges (for Alternative FS and Preferred Alternative DS) between the Hackensack River and the Boonton Line. In addition, bridges would be constructed across the Kearny Brackish Marsh and the open water just west of Belleville Turnpike. Furthermore, retaining walls would limit the encroachment within Cedar Creek Marsh. With respect to embankment, the majority of fill would occur on the industrial property between Belleville Turnpike and the former Erie Arlington Branch. Buildings located within the floodplain in this portion of the project site would be removed, which to some extent would offset the proposed encroachment. The other industrial building, also located in the floodplain, to be acquired for the project would

also reduce the potential impacts to floodplains. By using elevated structures and retained embankment the potential fill in the floodplain would be reduced by approximately half when compared to a base case of embankment only. Removal of the existing structures within the 100-year floodplain would further reduce the project's overall impact to the base floodplain.

ALTERNATIVE-SPECIFIC IMPACTS

As described in Chapter 3 and shown on Figure 3-14, the impacts from each alternative are described by location within the seven sections of the project site. A quantitative estimate of wetland, open water, and benthic habitat impacts from each build alternative is presented in Table 5.6-6. Overall, wetland impacts resulting from the proposed project would range from 5.4 to 6.4 acres of the approximately 8,400 acres that make up the wetlands and waterways of the Meadowlands District. As shown in Table 5.6-6, much of the wetland impacts are made up of *Phragmites*-dominated coastal and interior wetlands. The remainder of the impacts include scrub-shrub and herbaceous wetlands (also vegetated with *Phragmites*), and open water and benthic habitats. Based on the current design, the differences among the four build alternatives with respect to wetland impacts are relatively minor. All four alternatives would have the potential for fragmenting wetlands. However, the use of structure (as opposed to embankment) for the bridge approaches would allow for ecological and hydrologic connectivity and would minimize the potential for fragmentation, although the potential for long-term impacts from shading is difficult to predict. As appropriate based on consultation with the involved natural resource agencies, a monitoring program will be implemented following project completion to identify if habitat fragmentation has occurred. The direct effects to open water and benthic habitat would be largely the same for all of the build alternatives, and would be due primarily to the foundations for the two new Hackensack River spans and for the new structures over open water areas (in Kearny Brackish Marsh and near Belleville Turnpike).

F. MITIGATION

As stated in Chapter 3, "Project Alternatives," the four build alternatives were identified as a result of a rigorous alternatives development and screening process, which involved consideration of adverse environmental effects. Due to the nature and location of the river crossing and the need for continuous operations along the Northeast Corridor, complete avoidance of wetland and open water areas would not be feasible for any of the build alternatives. Consistent with Executive Order 11990, it has been determined that there is no prudent and feasible alternative to avoid construction in wetlands and therefore measures to minimize harm have been considered. Efforts to minimize wetland impacts were incorporated into the alternative development and screening process and included selection of alignments that would minimize wetland takings, use of structure where practicable in lieu of embankments for new rail lines, placement of retaining walls (to minimize fill) where feasible, and consultation and coordination with natural resource agencies. As discussed above, the potential impacts to wetlands from all build alternatives have been substantially reduced from those discussed in the DEIS. Measures to further minimize the potential for adverse ecological impacts will be considered as the project proceeds.

As described earlier, the assessment of impacts on wetlands, open water, and benthic habitat presented in this EIS was conservatively estimated using mapping resources, limited visual inspections, and preliminary engineering alignments. Once engineering design has sufficiently progressed and the permitting phase of the project has begun, the acres of ecological resource

impact will be field-verified. Field reviews will follow scientifically acceptable methods based on the *1987 ACOE Wetland Delineation Manual*, the *1989 Federal Manual for Identifying and Delineating Jurisdictional Wetlands*, and methods outlined by the American Society of Testing and Materials (ASTM).

As part of their respective permitting authority, federal and state regulatory agencies will require compensatory mitigation to offset the project's impacts on ecological resources described above. All of the affected wetlands are under the jurisdiction of NJMC. The mitigation requirements are addressed, at a state level, in the NJDEP Freshwater Wetlands Rule (N.J.A.C 7:7a), the NJDEP Coastal Permitting program (N.J.A.C. 7.7e), and the NJDEP Flood Hazard Control Act (N.J.A.C. 7:13). On the federal level, mitigation requirements are addressed in the Final Rule on Compensatory Mitigation for Losses of Aquatic Resources, administered by USACOE and USEPA (March 2008). This new rule stresses that all compensatory mitigation provide a high level of functional capacity, even when compensating for degraded or low quality resources. The agencies are moving towards a greater reliance on functional assessments to quantify mitigation ratios.

The project's ultimate mitigation requirements will be determined as part of federal and state permitting process after the NEPA Record of Decision is published. The mitigation requirements will be based on the impact areas for benthic, wetland, open water, shading, and floodplain impacts, applied at appropriate compensation ratios. These ratios measure the required acreage to compensate for the loss of a given acre of resource. The ratios will be developed in coordination with natural resource management agencies and would be based on factors including, but not limited to, value, function, and/type of wetland impacted, existing contamination within the project area, and the availability of appropriate in-kind restoration areas. The temporary impacts discussed in Chapter 6 will also be incorporated into these mitigation measures to ensure that all environmental impacts are adequately addressed.

The regulations allow for several types of mitigation, including wetland restoration, wetland creation, wetland enhancement, purchase of wetland mitigation credits, upland preservation, monetary contribution for the purchase and enhancement of existing degraded wetland property, or land donation. Typically, compensatory mitigation ratios of 2:1 for establishment/restoration and 3:1 for enhancement have been used. Ratios for preservation are usually much higher. However, as discussed above, the ultimate ratios to be used to mitigate the impacts of the preferred alternative would be developed in conjunction with NJDEP, NJMC and ACOE during the permitting process as well as continued coordination with MIMAC on the overall mitigation planning.

Options for providing compensatory mitigation for the Portal Bridge Capacity Enhancement Project include:

- Purchasing credits from a state- and federally-approved wetland mitigation bank.
- Completion of a project-specific mitigation project at a site in the Meadowlands. The project could entail the establishment, restoration or enhancement of wetlands at potential sites such as the Richard P. Kane Tract in Carlstadt and South Hackensack or the Oritani Marsh in East Rutherford.
- Completion of a mitigation project in conjunction with NJ TRANSIT's Access to the Core (ARC) Project, which would also result in wetland impacts in the Meadowlands District. The combined effects of these projects are discussed further in Chapter 7, "Secondary and Cumulative Effects."

- Establishment, restoration or enhancement of the wetland areas bordering the Portal Bridge project site.
- A combination of the above mitigation strategies.

A preferred option is to purchase credits from an established wetland mitigation bank. Currently, there are no approved banks available within the Meadowlands District. However, credits may become available from the Richard P. Kane Tract (referred to as the "Kane Tract" and previously known as the "Empire Tract") prior to Portal Bridge construction commencement in December 2011. The Kane Tract is being developed by the Meadowlands Conservation Trust as a wetland mitigation bank specifically for transportation projects in the Meadowlands District. The Kane Tract is being established in accordance with the Request for Qualifications (RFQ) issued by the Meadowlands Conservation Trust on April 7, 2008. As per the RFQ, 254 acres of the Kane Tract (out of the total 584 acres) will be made available for compensatory mitigation exclusively for NJ TRANSIT, the New Jersey Turnpike Authority, the New Jersey Department of Transportation (NJDOT), and the Port Authority of New York and New Jersey (PANYNJ). Depending upon the scheduled completion of the wetland bank at the Kane Tract, some, if not all, of the compensatory mitigation required for the Portal Bridge Capacity Enhancement Project may be purchased from this bank. The final selection of a mitigation program will need to consider the availability of credits as well as the potential requirements for mitigation to be initiated prior to or concurrent with construction activities.

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A. INTRODUCTION

Contaminated materials are potentially harmful substances that may be present in soil, groundwater, or building materials and may pose a threat to human health or the environment. These materials are frequently encountered during construction activities in industrial areas that have been subject to past disturbance from construction, excavation, filling and industrial uses. Generally, "contaminated material" is used interchangeably with "regulated material" or "hazardous material," but none should be confused with the term "hazardous waste," which is a regulatory term.[1] This chapter assesses the potential for the presence of these materials on the project site, the potential for exposure to them during and after construction of the project, and the specific measures that would be employed to protect public health, worker safety, and the environment.

For each site that would be affected by the project, the analysis begins by considering the location, type, and extent of contaminated materials that may be present in the soil or groundwater because of past or present uses either on or adjacent to the site. As described below, this assessment was conducted through a review of regulatory records and databases and consultation with regulatory agencies. This evaluation focuses on construction activities since the construction work for the project would disturb the soil and, in some locations, the groundwater. Finally, the chapter describes mitigation measures related to contaminated materials and discusses how those measures would avoid potential impacts both during construction and once the project is completed and operational.

POTENTIAL CONTAMINANTS OF CONCERN

Soil and groundwater beneath a site can become contaminated because of past or present uses on the site or adjacent properties. Most of the sites affected by the project are currently or were historically in railroad or industrial use. Normal rail operations—including maintenance and routine operations—can over time lead to contamination from spills. Along rail lines, common contaminants include volatile and semi-volatile organic compounds, heavy metals, pesticides, and herbicides. The project area may also have been contaminated by past or current uses of neighboring properties, particularly since many of the affected sites are located in largely industrial and manufacturing areas. In addition, much of the rail right-of-way (and much of the development in the area) was built on fill material (of unknown origin), which often contains contaminants such as polycyclic aromatic hydrocarbons (PAHs) and heavy metals. Some of the

[1] "Hazardous waste" is defined in the Environmental Protection Agency (USEPA) regulations (40 C.F.R. Part 261) and refers to a subset of solid wastes that are either specific wastes listed in the regulations (listed wastes) or solid wastes possessing the characteristics of ignitability, reactivity, corrosivity, or toxicity (characteristic wastes).

potential common contaminants of concern for the project site and adjacent uses are discussed below.

- *Polychlorinated Biphenyls (PCBs)*. Commonly used as a dielectric fluid in train-mounted or yard transformers, PCBs are of special concern at rail yards and train maintenance locations.
- *Heavy metals, including lead, cadmium, chromium, and mercury*. These have been widely used in many industries, including printers, foundries, and metal working facilities, and are found in paint, ink, petroleum products, and coal ash. Lead is also a common component of paint on bridges or other steel structures, and can be found in elevated concentrations in soil near roadways as a result of the historic use of leaded gasoline.
- *Volatile Organic Compounds (VOCs)*. These include aromatic compounds (such as benzene, toluene, ethyl benzene, and xylene [BTEX]), which are found in petroleum products used in fuels, equipment repair and metal works, as well as many other industries; and chlorinated compounds (such as tricholoroethene and tetrachloroethene, common ingredients in solvents and cleansers) used in degreasing, dry cleaners, and other industrial facilities. Soil and groundwater can become contaminated with VOCs and vapors can be released, especially during excavation activities. In addition, some VOCs, such as methane, can be flammable if the vapors are confined. Methane is produced from the breakdown of organic materials and can be associated with marsh deposits as well as landfilling with putrescible wastes.
- *Semivolatile Organic Compounds (SVOCs)*. These include PAHs (which are common constituents of partially combusted coal or petroleum-derived products); coal-derived products such as creosote applied to protect rail ties; and coal and coal ash used as fill material.
- *Pesticides and Herbicides*. These are commonly used to control rodents and/or insects, and vegetation in rail yards and along rail lines, particularly between the tracks.
- *Fuel Oil and Gasoline Storage Tanks*. Rail operations, businesses, and industries currently or formerly located in the project areas likely contained aboveground storage tanks (ASTs) or underground storage tanks (USTs) for fuels. Some of these tanks may have been removed. In some locations, spills and leaks associated with such tanks may have occurred. Other tanks, although no longer in use, may remain buried in place in the project areas. Soils and groundwater in proximity to fuel oil and gasoline storage tanks may be contaminated because of ongoing or past leaks or spills. Fuel oil and gasoline from off-site sources may have migrated to the project sites, contaminating soil and groundwater on-site.
- *Asbestos*. Potentially asbestos-containing materials may be located within buildings or on underground steam pipes, or at (illegal) dumping sites.

B. REGULATORY CONTEXT AND METHODOLOGY

APPLICABLE REGULATIONS

There are numerous regulations regarding contaminated materials at the federal and state levels. The applicable industry standards, regulatory requirements, guidelines and rules for contaminated materials investigations are listed in Table 5.7-1, followed by a summary of key regulations.

Table 5.7-1
Federal and State Regulations for Contaminated Materials

Regulation Type	Regulation
Federal	U.S. Environmental Protection Agency (USEPA) – National Environmental Policy Act (NEPA), 42 U.S.C. s/s 4321 (1969)
	USEPA – Clean Water Act (CWA), 33 U.S.C. s/s 1251 et seq. (1977)
	USEPA – Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), 42 U.S.C. s/s 9601 et seq. (1980)
	USEPA – Resource Conservation and Recovery Act (RCRA), 42 U.S.C. s/s 321 et seq. (1976)
	USEPA – Safe Drinking Water Act (SDWA), 42 U.S.C. s/s 300f et seq. (1974)
	USEPA – National Emissions Standards for Hazardous Air Pollutants (NESHAPS), 40 C.F.R. Part 61
	USEPA – 40 C.F.R. Parts 260, 261, 262, 263, 266, 268, and 280
	USEPA – Asbestos Hazardous Emergency Response Act (AHERA), 40 C.F.R. Part 763
	USEPA – Lead: Requirements for Lead-Based Paint Activities in Target Housing and Child-Occupied Facilities; Final Rule, 40 C.F.R. Part 745
	Occupational Safety and Health Administration (OSHA) – 29 C.F.R. 1910.120, 1910.1001,1910.1101, 1926.62, and 1929.58
	U.S. Department of Housing and Urban Development (HUD) – Guideline for the Evaluation and Control of Lead Based Paint Hazards in Housing pursuant to Title X of the Housing and Community Development Act of 1992
	Toxic Substances Control Act (TSCA), 15 U.S.C. s/s 2601 et seq. (1976)
	OSHA – Lead: Occupational Health and Environmental Controls, 29 C.F.R. 1926.62
	OSHA – Asbestos, 29 C.F.R. 1926.1101
	Federal Highway Administration (FHWA) – Technical Advisory, T6640.8A (1987)
	FHWA – Supplementary Hazardous Waste Guidance (1997)
	FHWA – Hazardous Wastes in Highway Rights-of-Way (1994)
	FHWA – Interim Guidance, Hazardous Waste Sites Affecting Highway Project Development (1988)
	FHWA – Policy Revision to Support the Brownfield Economic Redevelopment Initiative (1998)
State of New Jersey	Spill Compensation and Control Act N.J.S.A. 58:10-23.11
	New Jersey Department of Environmental Protection (NJDEP) Technical Requirements for Site Remediation (TRSR), N.J.A.C. 7:26E.
	NJDEP Soil Cleanup Criteria
	NJDEP Department Oversight of the Remediation of Contaminated Sites, N.J.A.C. 7:26C
	NJDEP Solid Waste Regulations, N.J.A.C. 7:26
	NJDEP Pollutant Discharge Elimination System, N.J.A.C. 7:14A
	NJDEP Hazardous Waste Regulations, N.J.A.C. 7:26G
	NJDEP Industrial Site Act Recovery Rules, N.J.A.C 7:26B
	NJDEP Discharge of Petroleum and Other Hazardous Substances, N.J.A.C 7:1E
	NJDEP Underground Storage Tanks, N.J.A.C. 7:14B
	NJDEP Surface Water Quality Standards, N.J.A.C. 7:9B
	NJDEP Ground Water Quality Standards, N.J.A.C. 7:9-6
American Society for Testing and Materials Guidelines	ASTM E1527-05 Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process

NEW JERSEY REMEDIATION GUIDANCE, POLICY, AND REGULATIONS

Soil and Groundwater Standards

The Brownfield Act codified at N.J.S.A. 58:10B-12 provides that the NJDEP "shall adopt minimum remediation standards for soil, groundwater and surface water quality necessary for

the remediation of contamination of real property." In addition, the Act also provides that these standards "shall be developed to ensure that the potential for harm to public health and safety and to the environment is minimized to acceptable levels, taking into consideration the location, the surroundings, the intended use of the property, the potential exposure to the discharge and the surrounding ambient conditions, whether naturally occurring or man-made." Based upon the Act, the NJDEP has developed three sets of soil remediation standards—residential, nonresidential, and impact to groundwater—based on the projected use of the site. Residential soil remediation standards are set at levels that are based upon the use of the site for residential or similar uses without the need for engineering or institutional controls. Nonresidential soil remediation standards are set at levels of contaminants that recognize the lower likelihood of exposure to contamination on property that will not be used for residential or similar uses. The NJDEP may also approve a remedial action where soils contain contaminants above the remediation standards provided that the property owner agrees to impose restrictions on the use of the property (for example, through the use of institutional controls) and install engineering controls to restrict contact with the residual contamination.

The NJDEP Groundwater Quality Standards (GWQS) specify levels of constituents that, when exceeded, will substantially impair a designated use of water. These standards include a provision for the NJDEP to designate areas of exception to the application of the GWQS in specific situations. The specific area where the GWQS are not met is designated as a Classification Exception Area (CEA). These areas are established to provide notice that the constituent groundwater standards are not met and that the designated aquifer uses are suspended.

Industrial Site Recovery Act (ISRA)

NJDEP's ISRA requires owners or operators of an industrial establishment to notify NJDEP when they are planning to close or transfer the property to a new owner or operator. A "No Further Action" (NFA) letter is required from NJDEP prior to the transaction. If an NFA cannot be issued due to outstanding environmental concerns at the site, NJDEP must approve a remedial action work plan or a remediation agreement.

Revised Chromium Policy

On February 8, 2007, NJDEP lifted a previously-enacted moratorium regarding NFAs for sites or portions of sites contaminated with chromium. The modified policy specifies the criteria that must be met in order to obtain an unconditional NFA for soils, an unconditional NFA for groundwater, a conditional NFA for soils and/or groundwater for a site that will include day care, residential, or educational uses, and a conditional NFA for soils and/or groundwater for a site that will include commercial, industrial, or open space uses.[1]

ASTM PHASE I/II INVESTIGATIONS

The initial environmental assessment of a property, referred to as a Phase I Environmental Site Assessment (ESA) includes a records search within radii specified in ASTM[2] E1527-05; a review of available documents with the federal, state and local regulatory agencies; review and interpretation of historical data which may reveal evidence of historical activities and their

[1] http://www.state.nj.us/dep/dsr/chromium/crmorlift200702.pdf, accessed May 24, 2007.

[2] American Society of Testing and Materials Standards

potential to impact the environment; a site inspection; and interviews with the current and past operators at the parcel. Normally, the focus of the investigation is to determine past and current uses of a site as related to contaminated materials usage and potential for subsurface contamination. The intent of the Phase I ESA is to also identify and evaluate Recognized Environmental Conditions (REC) associated with a property to allow the user to qualify for the innocent landowner defense under CERCLA.

In addition to the requirements of a Phase I ESA, the NJDEP requires completion of a Preliminary Assessment, the minimum requirement for a site that will undergo a NJDEP review. The Preliminary Assessment serves as the basis for completing an environmental investigation of a site as a means towards obtaining a NFA approval from the NJDEP as well as a means toward meeting the minimum requirements of the due diligence requirements of the innocent purchaser defense as defined by the Spill Compensation and Control Act. The findings of a Phase I ESA or Preliminary Assessment include information available from a review of existing conditions and identify specific areas of concern where additional (Phase II) investigations are warranted to characterize areas and media that are potentially impacted.

Phase II site investigations are field investigations intended to obtain site-specific analytical data at the areas of concern identified during the Phase I investigation, characterize the conditions at the site, and potentially delineate the extent of the contamination. The investigations include collection and laboratory analysis of soil and groundwater samples. The results are compared to the relevant NJDEP cleanup criteria to determine the extent of contamination. The findings of a Phase II investigation assess the need for additional investigations on parcels where right-of-way acquisition or construction activities are anticipated, and aid in developing contaminated soil and groundwater management options during a project's implementation and operation.

SUPERFUND

The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), commonly known as "Superfund," is the law enacted in 1980 which provides the federal government with the authority to respond directly to releases of contaminated substances that may endanger public health or the environment. Superfund sites—areas which may pose such threat—are placed on the National Priorities List (NPL).

USEPA can be notified of situations by individuals that handled the contaminted materials; state, tribal or local governments; reviews of federal and state records; formal citizen petitions; or informal community observation. Upon notification of a potentially contaminated site, the USEPA or trained representatives of the local government conduct a Preliminary Assessment to determine whether a site poses little or no threat to human health and the environment, or if further investigation is warranted. Typically, if further investigation is warranted, a Site Inspection (SI) is conducted. Information from the SI is used to create a Hazard Ranking System (HRS) score, which determines eligibility for the NPL.

According to the USEPA website (http://www.epa.gov/superfund/sites/npl/npl_hrs.htm), inclusion of a site on the NPL guides the USEPA in:

- Determining which sites warrant further investigation to assess the nature and extent of the human health and environmental risks associated with a site;
- Identifying what CERCLA-financed remedial actions may be appropriate;
- Notifying the public of sites USEPA believes warrant further investigation; and

- Serving notice to potentially responsible parties that USEPA may initiate CERCLA-financed remedial action.

Appropriate remedial actions are identified during the Feasibility Study (FS) and Remedial Design (RD) phases, and implemented in the Remedial Action (RA) phase. The property owner, previous property owner or party otherwise responsible for the contaminated site is liable for the funding of these actions. In such circumstances the responsible party does not or is unable to pay, the costs are covered by the Superfund and the Oil Liability Trust Fund established by Congress.

METHODOLOGY

The primary study area for the contaminated materials assessment includes those areas where construction activities would occur as part of one or more of the build alternatives. The secondary study area for this analysis is the area roughly between Swift Interlocking to the west and Secaucus Transfer Station to the east, 2,000 feet north and 2,000 feet south of the Northeast Corridor.

PRELIMINARY SITE SCREENING METHODOLOGY

The contaminated materials assessment began with identifying all potential sites of concern within the secondary study area. Federal and state databases and regulatory records were reviewed—including listings of spills, petroleum storage facilities, and state and federally listed contaminated materials sites—to determine the regulatory status of each site. The search of federal and state environmental agency records was conducted in general accordance with ASTM E1527-05 for the secondary study area. A report summarizing the environmental database search was prepared by Environmental Data Resources, Inc. (EDR) of Milford, Connecticut. A copy of the report is attached as Appendix D**.** Table 5.7-2 shows the federal and state databases that were searched as part of the preliminary site screening methodology. Some of the properties within the primary and secondary study areas have undergone extensive environmental investigations and, where feasible, publicly-available environmental studies were reviewed as part of this analysis. Additionally, the project sponsors met with representatives of NJDEP, USEPA, and property owners regarding the sites expected to be directly affected by the proposed property.

SECONDARY SCREENING METHODOLOGY

Based on the results of the preliminary site screening, those sites warranting additional investigation were identified. Sites were categorized either as: (1) potentially requires further investigation; or (2) further investigation not required. Sites not requiring further investigation were determined unlikely to affect the project site, either because of geographic reasons (e.g., sites were located 2,000 feet from the Northeast Corridor, but were across the Passaic River and therefore highly unlikely to be disturbed) or due to completion of prior remediation activities. Sites determined not to require further investigation included locations of small spills of contaminated materials or petroleum (less than 50 gallons); spills and tanks associated with residential-use storage tanks of 2,000 gallons or less; closed status spills indicating satisfactory completion of prior remediation activities, surface water and air releases; and registered contaminated waste generators, transporters, and treatment, storage, and disposal (TSD) facilities where there were no reported incidents of spills or discharge of contaminated substances.

Table 5.7-2
Databases Searched

Database Searched	Description
Federal ASTM Standard Databases	
National Priority List (NPL)	Identifies site for priority cleanup under the Superfund Program.
Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS) List	Data on potentially hazardous waste sites that have been reported to the USEPA pursuant to Section 103 of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA).
CERCLIS No Further Remedial Action Planned (CERC-NFRAP) List	CERCLIS sites that have been removed from CERCLIS.
Corrective Action Report (CORRACTS) List	Identifies hazardous waste handlers with Resource Conservation and Recovery Act (RCRA) corrective action activity.
Resource Conservation and Recovery Information System (RCRIS) List	Includes information on sites which generate, transport, treat and/or dispose of hazardous waste as defined by RCRA.
Emergency Response Notification System (ERNS) List	Data on reported releases of oil and hazardous substances.
State ASTM Standard Databases	
Known Contaminated Sites Administered by NJDEP (State Hazardous Waste Site [SHWS])	Sites in New Jersey under the purview of the Site Remediation Program which have contamination levels greater than applicable cleanup criteria soil and/or groundwater standards.
Solid Waste Facility Directory (SWF/LF)	Inventory of solid waste disposal facilities or landfills.
Leaking UST (LUST) List (NJDEP)	Inventory of reported leaking underground storage tank incidents.
Underground Storage Tank (UST) List (NJDEP)	Inventory of USTs regulated under Subtitle I of RCRA.
Federal ASTM Supplemental Databases	
CERCLA Consent Decrees (CONSENT)	Major legal settlements that establish responsibility and standards for cleanup at NPL (Superfund) sites.
Records of Decision (ROD)	ROD documents mandate a permanent remedy at an NPL (Superfund) site.
De-Listed NPL	Sites deleted from the NPL in accordance with 40 C.F.R. 300.425(e).
Facility Index System (FINDS)	Includes facility information and “pointers” to other sources that contain more detail.
Hazardous Materials Information Reporting System (HMIRS)	Includes hazardous material spill incidents reported to the Department of Transportation.
Material Licensing Tracking System (MLTS)	Database of sites which possess or use radioactive materials and which are subject to Nuclear Regulatory Commission requirements.
Mines Master Index File (MINES)	Inventory of mines active or opened since 1971.
NPL Liens	Inventory of sites where the USEPA has filed liens against real property in order to recover remedial action expenditures.
PCB Activity Database System (PADS)	Inventory of generators, transporters, commercial storers and/or brokers and disposers of PCB’s.

Table 5.7-2 (cont'd)
Databases Searched

Information/Data Required	Description
Federal ASTM Supplemental Databases	
Department of Defense (DOD)	Sites Inventory of federally owned or administered lands, administered by the DOD, that have any area equal to or greater than 640 acres.
US Brownfields	Listing of brownfields properties addressed by Cooperative Agreement Recipients and brownfields addressed by Targeted Brownfields Assessments.
RCRA Administrative Action Tracking System (RAATS)	Includes data on enforcement actions issued under RCRA pertaining to major violators and includes administrative and civil actions brought by the USEPA.
Toxic Chemical Release Inventory System (TRIS)	Inventory of facilities which release toxic chemicals to the air, water and land in reportable quantities under SARA Title III Section 313.
Toxic Substances Control Act (TSCA)	Manufacturers and importers of chemical substances included on the TSCA Chemical Substance Inventory list.
Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA)/Toxic Substances Control Act (TSCA) Tracking System (FTTS)	Data on administrative cases and pesticide enforcement actions and compliance activities related to FIFRA, TSCA and EPCRA (Emergency Planning and Community Right-to-Know Act.
State or Local ASTM Supplemental Databases	
New Jersey Major Facilities	Facilities having total combined storage capacity of 20,000 gallons or more for hazardous substances other than petroleum or petroleum products, or 200,000 gallons or more of hazardous substances of all kinds.
New Jersey Spills	Initial notification information of hazardous material incidents.
New Jersey Release Database	Initial notification information reported to the NJDEP's Environmental Action Line.
Publicly-Funded Cleanups Site Status Report (NJDEP)	Includes information on publicly funded cleanups.
Chromate Chemical Production Waste Sites (NJDEP)	Inventory of known chromate chemical production waste sites.
New Jersey Pollutant Discharge Elimination System Dischargers(NJPDES)	Inventory of permitted NJPDES dischargers.
Former Manufactured Gas (Coal Gas) Sites	Inventory of former Manufactured Gas (Coal Gas) Sites.
Brownfields (NJDEP)	Former or current commercial or industrial use sites that are presently vacant or underutilized, on which there is suspected contamination to the soil or groundwater at concentrations greater than applicable cleanup criteria.
Sites with Closed Case(s) with Restrictions (NJDEP)	Sites with engineering and/or institutional controls that remain in place as part of a remedial action to address soil and/or groundwater contamination.

Sites potentially requiring further investigation, depending on the extent of disturbance associated with construction of the proposed project, may need additional research. This may entail consultation with NJDEP and/or other regulatory authorities to evaluate the disturbance's potential to affect the project site. Site-specific protocols may also need to be prepared either for soil/groundwater testing or for appropriate safety or waste management procedures. The assessment did not consider groundwater flow direction and proximity to the project site. This analysis is therefore conservative since potential contamination in any direction is considered. Sites located upgradient (with respect to groundwater) of the rail lines have a greater potential to impact the project site because contaminants may travel downgradient in the groundwater. Sites downgradient of the rail lines are less likely to impact the project site. Proximity to the rail line is also an important factor in determining potential for impact. All other factors being equal, the closer a listed site is to the project site, the greater the likelihood for impact.

For those sites where previous environmental investigations were available for review, the levels of various chemical constituents in soil and groundwater have been compared to various regulatory limits and guidelines, as appropriate for non-residential sites. These values generally serve as screening levels—contamination identified at levels below the screening level do not warrant further evaluation, and contamination above the screening level indicates the need for additional information and/or potential mitigation. The criteria used to evaluate contaminants are described in Table 5.7-3. In addition, as described later in this chapter, any material that must be removed from the project for disposal off-site will undergo a separate evaluation of contamination to meet off-site disposal requirements.

Table 5.7-3
Evaluation Criteria

Matrix	Action	Regulation
Non-residential soil	Clean Up Criteria	N.J.A.C. 7:26D NRSCC
Residential soil	Clean Up Criteria	N.J.A.C. 7:26D RSCC
Dewatering	Sewer Discharge	Local sewer ordinance
Dewatering	Surface Water Discharge	NJPDES Permit
Notes: NJPDES – New Jersey Pollutant Discharge Elimination System		

C. EXISTING CONDITIONS

The following assessment summarizes conditions at and adjacent to the project site, based on the results of the records research and review of previous investigations of sites in the vicinity. More information is provided in these investigation reports and other studies that are supporting documents to this EIS. For the larger secondary study area, which includes primarily commercial and industrial sections of Kearny and Secaucus, a review of federal and state environmental agency databases was conducted. This review identified 292 sites with potential petroleum or contaminated materials contamination. Appendix D provides the complete EDR report and a summary of the potential contamination sources at each of the sites.

The initial screening of these 292 sites was determined using the methodology presented in Section B, above. Of the 292 potentially contaminated sites within the primary study area, those determined to potentially require additional investigation are listed in Table 5.7-4. These include gasoline service stations and other fuel dispensing facilities, former and current industrial facilities, closed sanitary and other solid waste disposal landfills, warehouses, scrap yards, and

sites contaminated with chromite ore processing residue (COPR), which is a regional issue in Hudson County. Since the DEIS, this table has been updated to reflect more recent information provided by commentors and representatives of affected property owners.

Table 5.7-4
Secondary Screening – Sites Potentially Requiring Further Investigation

Item No.	Site Identification	Site Address	Reference	Potential Contaminants
1	NJ Turnpike Authority	24 County Avenue Secaucus, NJ	NJDEP UST Facility ID: 259685 LUST	Petroleum products
2	None	38 County Avenue Secaucus, NJ	NJDEP NJ Release: Case No: 06-02-08-1602-17	Petroleum products
3	Intermodal Facility	501 New County Road Secaucus, NJ	NJDEP NJ Release / VCP Case No: 06-11-17-0833-35	Unknown
4	Laurel Hill Redevelopment Area	New County Road/County Road Ext Secaucus, NJ	NJDEP VCP	Petroleum products
5	Gallo Asphalt Landfill AKA 1947 Landfill (former)	New County Road/County Road Extension Secaucus, NJ	NJDEP VCP: Case No. 00094813	No additional information reported
6	Command Web Offset Company, Inc.	100 Castle Road Secaucus, NJ	NJDEP SHWS: Case No: 165863 VCP: Case No: 02-09-18-1515-26	Petroleum products.
7	Vacant Lot	Vacant Lot New County Road Secaucus, NJ	NJDEP SWF/LF: Facility ID: 0909000429	Municipal waste landfill
8	Ames Warehouse	1000 New County Road Secaucus, NJ	NJDEP	Arsenic, base neutrals and other metals
9	Service Station Specialists	SSS Construction Company 800 New County Road Secaucus, NJ	NJDEP UST: Facility ID: 018680 LUST HIST:	Petroleum products
10	999 New County Road	999 New County Road Secaucus, NJ	NJ Release: Case No. 02-09-24-0944-04	Unknown
11	1500 New County Road Extension	1500 New County Road Extension Secaucus, NJ	EPA HMIRS	Hazardous material

Table 5.7-4 (cont'd)
Secondary Screening – Sites Potentially Requiring Further Investigation

Item No.	Site Identification	Site Address	Reference	Potential Contaminants
12	Cylinder Maintenance Corp	590 Belleville Turnpike Kearny, NJ	EPA RCRA-TSDF Facility ID: NJD000632240 CORRACTS:	Unknown
13	Nicole's Warehouse Hudson County Chromate Site 58	Hudson County Chromate #58 996 Belleville Turnpike Kearny, NJ	SHWS: Case No: G000008698	Chromium
14	L & J Drum Company	L & J Drum Company 1810 Harrison Avenue Kearny, NJ	CERCLIS-NFRAP EPA ID: NJD991291501	Unknown
15	Hudson County Chromate Site 48 Clinton Cartage	Hudson County Chromate # 48 1000 Belleville Turnpike Kearny, NJ	NJ Institutional Control CEA Case No: 82293 NJ Engineering Control Site ID: 66604	Chromium
16	Standard Chlorine Chemical Company, Inc., Hudson County Chromate Site 116	Standard Chlorine Chemical Company Inc. 1035 Belleville Turnpike Kearny, NJ	NJDEP: Facility ID: 37720	A large body of information is already available within the ARC DEIS.
17	Standard Chlorine Chemical Company, Inc., Hudson County Chromate Site 116	1035 Belleville Turnpike Kearny, NJ	ERNS:	Sulfuric acid discharge to a diked area on 03/01/1990
18	Diamond Shamrock Corp., Hudson County Chromate Site 113	1015 Belleville Turnpike Kearny, NJ	NJPDES: Permit No. NJG120049	Stormwater discharge
19	Diamond Shamrock Corp., Hudson County Chromate Site 113	1015 Belleville Turnpike Kearny, NJ	FINDS: NJEMS	Additional information would be available within the NJEMS database
20	Diamond Shamrock Corp., Hudson County Chromate Site 113	1015 Belleville Turnpike Kearny, NJ	NJ Spills: Case No. 93-02-08-1623-27 NJPDES: Permit No. NJ0120049	A large body of information is already available within the ARC DEIS.
21	Former Kearny Drum Dump Jana Corporation (Royale Linens) Site 50	Hudson County Chromate # 50 Everest Realty Company 993 Belleville Turnpike Kearny, NJ	CERCLIS-NFRAP Facility ID: 0201124 NJ Institutional Control: Facility ID: 22012 NJ CHROME: Facility ID: 50	Site archived on 03/31/87 Chromium and other unknown contaminants

Table 5.7-4 (cont'd)
Secondary Screening – Sites Potentially Requiring Further Investigation

Item No.	Site Identification	Site Address	Reference	Potential Contaminants
22	Contract Applications Inc 1148 Newark Turnpike Kearny, NJ 07032	Contract Applications Inc 1148 Newark Turnpike Kearny, NJ 07032	EPA ID: NJD982719536	No violations reported
23	N/A Area of Harrison Avenue /I-280 Ramp Kearny Town, NJ	Area of Harrison Avenue /I-280 Ramp Kearny Town, NJ	NJ Spills: Case No. 99-03-11-1117-15	Leachate leak from landfill on to the roadway
24	N/A Kearny Drum Dump No. 2 Harrison Avenue Between Route 508 and Erie Kearny, NJ 07032	Kearny Drum Dump No. 2 Harrison Avenue Between Route 508 and Erie Kearny, NJ 07032	CERCLIS-NFRAP Site ID: 0200873 FINDS: EPA ID: NJD980770069	Drum dump was assessed and hazardous materials including contaminated soils were removed in 1985.
25	GSF	GSF 1501 Harrison Avenue Kearny Town, NJ	NJ Spills: Case No. 00-01-13-1252-39	Former landfill. Unknown contaminants
26	Drew Chemical Corporation	Drew Chemical Corporation 1106 Harrison Avenue Kearny, NJ 07032	SSTS: Registration No. 001757NJ001	Registered pesticides producing/marketing/exporting facility.
27	Standard Tallow Corporation B & L Oil Corporation	Standard Tallow Corporation 1215 Harrison Avenue Kearny, NJ 07029	FTTS: ICIS: Action ID: 02-1992-0021	Pesticides Petroleum products, unknown (Closed recycling center)
28	HMDC 1-A SLF	HMDC 1-A SLF 1800 Harrison Avenue Kearny, NJ	HIST LF: Facility ID: 0907000423	Municipal Sanitary Landfill Unknown contaminants
29	G & S Motor Equipment Company	G & S Motor Equipment Company 1800 Harrison Avenue Kearny, NJ 07032	EPA CERCLIS-NFRAP NJDEP VCP: Case No. 95-12-14-1751-32 HWS RE-VAL: PI No. G000002335	Elevated levels of PCBs in soils.
30	Central Salvage Company	Central Salvage Company 1221 Harrison Avenue Kearny Town, NJ 07032	NJDEP: SHWS: Case ID: 031684	Active, deed notice addresses elevated cadmium in addition to petroleum products.
31	Campbell Foundry Company 1235 Harrison Avenue Kearny, NJ 07032	Campbell Foundry Company 1235 Harrison Avenue Kearny, NJ 07032	EPA ID: NJD002457273 NJDEP SHWS: Case No. 003511	Soil contamination due to gasoline UST.

Table 5.7-4 (cont'd)
Secondary Screening – Sites Potentially Requiring Further Investigation

Item No.	Site Identification	Site Address	Reference	Potential Contaminants
32	Municipal Sanitary Landfill Authority	Municipal Sanitary Landfill Authority 1500 Harrison Avenue Kearny, NJ	EPA ID: NJD981877673 SHWS: Case ID: G000006013	Non-superfund Landfill. Municipal wastes, waste oils, etc. were deposited. 94-acre site active status located in a wetland area near the Passaic River / Exit 15W of NJ Turnpike. Active. Remedial actions by NJDEP
33	Goody Products Incorporated	Goody Products Inc 969 Newark Turnpike, Inc. 969 Newark Turnpike Kearny Town, NJ	NJ Release: SHWS: Case ID: 014955 NJ ISRA: Case No: E93466	Petroleum products
34	Diamond Head Oil Refinery	Diamond Head Oil Refinery 1401 Harrison Turnpike Kearny Town, NJ 07032	SHWS: Case ID: G000003964	Petroleum products
35	NJ TRANSIT	Meadowlands Maintenance Complex 1148 Newark Turnpike Kearny Town, NJ 07032	SHWS: Case ID: 030517	Active status. Heavy metals.
36	Preston Trucking Company, Inc.	Preston Trucking Company, Inc. 50 Harrison Avenue Harrison, NJ	NJDEP LUST HIST: Case ID: 95-05-03-1706-48	Petroleum products
37	Cap City Products Company, Inc.	Cap City Products Company, Inc. 125 Sanford Avenue Kearny, NJ 07032	HIST MAJOR Facility: Facility ID: 090700472000	Hazardous chemical storage and utilization.
38	Capital City Products Company, Inc. 125 Sanford Avenue Kearny Town, NJ 07032	Capital City Products Company, Inc. 125 Sanford Avenue Kearny Town, NJ 07032	NJ Engineering Controls	Base neutral compounds, metals and PCBs. Engineering controls in place.
39	Diamond Head Oil Refinery Division 1401 Harrison Turnpike Kearny, NJ	Diamond Head Oil Refinery Division 1401 Harrison Turnpike Kearny, NJ	CERCLIS NPL Facility ID: 0200484	Facility was in operation from 1946 to 1979. Extensive petroleum product contamination was encountered during the construction of I-280 in 1977

Table 5.7-4 (cont'd)
Secondary Screening – Sites Potentially Requiring Further Investigation

Item No.	Site Identification	Site Address	Reference	Potential Contaminants
40	Hudson County Chromate Site 59 (Trumbull Asphalt, a.k.a. Owens Corning) Kearny Roofing & Asphalt Plant 1249 Newark Turnpike Kearny, NJ 07032	Owens Corning Kearny Roofing & Asphalt Plant 1249 Newark Turnpike Kearny, NJ 07032	NJ MAJOR FACILITY: Facility No. 090700531000 NJ Spills: Case No. 93-3-22-1531-59 NJ Release: Case No. 02-12-06-1500-16 Case No. 03-06-07-0927-21	Petroleum product spills
41	NJ TRANSIT Rail Yard Newark Turnpike Kearny Town, NJ	NJ TRANSIT Rail Yard Newark Turnpike Kearny Town, NJ	NJ Spills: Case No. 94-3-29-1223-43	Related to discharge to storage tank dyke area.
42	MSLA 1-D 1500 Harrison Avenue Kearny, NJ	MSLA 1-D 1500 Harrison Avenue Kearny, NJ	HIST LF: Facility ID: 0907000415	Closed municipal sanitary landfill.
43	PSE&G Generator Pennsylvania Avenue Kearny Town, NJ	PSE&G Generator Pennsylvania Avenue Kearny Town, NJ	NJ Spills: Case No. 99-08-11-1527-17	Petroleum products, PAHs.
44	Monsanto Company	Monsanto Company 1 Pennsylvania Avenue Kearny, NJ	ICIS: Case ID: 02-1990-0063 NJ Institutional Control NJ Engineering Control	Deed notice to address soil contamination CEA to address groundwater contamination
45	G.O.D. Inc. Distribution Center	G.O.D. Inc. Distribution Center CSX Intermodal Facility Foot of Pennsylvania Avenue South Kearny, NJ	LUST HIST: Case ID: 98-07-14-1403-14 SHWS: Case ID: 0907	Petroleum product
46	S&W Waste Inc. 53 Pennsylvania Avenue South Kearny, NJ	S&W Waste Inc 53 Pennsylvania Avenue South Kearny, NJ	CERCLIS-NFRAP RCRA-TSDF Facility ID: NJD096865837	Unknown
47	Goldie's Auto Parts Hudson County Chromate Site 47	N/A	N/A	Chromite ore processing residue (COPR)
48	Kearny Township #1 Hudson County Chromate Site 51	N/A	N/A	Chromite ore processing residue (COPR)
49	Amtrak Access Road Hudson County Chromate Site 103	N/A	N/A	Chromite ore processing residue (COPR)
50	Hackensack River Access Road Site 131	N/A	N/A	Chromite ore processing residue (COPR)

ADDITIONAL INFORMATION ON SELECTED PROXIMATE SITES

The following sites, all in close proximity to the project site and potentially subject to direct disturbance (e.g., excavation) associated with one or more build alternatives, are discussed below in terms of history, known contamination, jurisdiction, remediation plans, etc.

AMTRAK'S RIGHT-OF-WAY

Amtrak owns right-of-way adjacent to the Northeast Corridor. Contamination within rail rights-of-way typically comes from a variety sources—leakage of diesel fuel from locomotives, leakage of lubricating or transformer oils from trains, contaminated material leakage from freight cars or contamination from stationary sources within the right-of-way (including the fill materials used to construct/elevate the right-of-way). The Northeast Corridor in the vicinity of the Portal Bridge has been electrified since its construction in 1900, and has not been used by freight traffic, greatly reducing the potential for contamination from railroad operations.

There is also the potential for contamination (including lead-based paint, asbestos-containing materials or PCBs or other oil-containing equipment) associated with ancillary structures to the railroad, such as signal towers, and power generation/transformer facilities. Prior studies performed on behalf of Amtrak recommended that a Phase II ESA be conducted within the railroad corridor to determine the level of contaminants in the soil and groundwater prior to construction activities.

DIAMOND SHAMROCK, STANDARD CHLORINE, KOPPERS COKE AND HACKENSACK RIVER SEDIMENTS

The 27-acre "Diamond Shamrock" property is located immediately west of the Hackensack River bordering the southern boundary of the existing Amtrak railroad embankment (see Figure 5.7-1). Until 1976, the property was used for the production of leather tanning chemicals (sodium dichromate and potassium dichromate). The majority of the buildings on the property were demolished in 1978. The site is covered with 8 to 10 feet of fill comprised of chromium laden slag and silty sand. The Occidental Chemical Corporation (successor to the Diamond Shamrock Corporation) owns the site and remediation is being overseen by Tierra Solutions under jurisdiction of NJDEP. As discussed later in this chapter, the Diamond Shamrock property is also referred to as "Site 113" and is one of several chromium-contaminated properties in the area. Investigation and remediation of this property has been and may to some extent continue to be tied to that of the two properties to the south (and thus farther from the proposed project). These other sites are known as "Standard Chlorine" and "Koppers Coke" (also known as the "Seaboard Site").

The 25-acre Standard Chlorine site is bound by the Belleville Turnpike (State Route 7), the Koppers Coke, and Diamond Shamrock sites, and the Hackensack River, and was used over the years for manufacturing items such as naphthalene products, creosote disinfectants, mothballs (dichlorobenzene), drain cleaner products, lead acid batteries, raw rubber parts, and dye carriers. NJDEP identified several areas of concern at the site including on-site lagoons, chromium ore processing residues, soil contaminated with dioxins, volatile and semi-volatile organic compounds, and semi-volatile organic compounds, contaminated concrete, groundwater contamination (including dense non-aqueous phase liquid [DNAPL]), contaminated drainage ditch surface water, and migration of contamination to the Hackensack River surface water and sediments. Remediation is expected to include installation of a hydraulic barrier along the Hackensack River and around the perimeter of the two sites to prevent potential migration of

5.15.08

- Study Area
- (1) 1-D Landfill
- (2) Jana Corporation (NJDEP Site 50)
- (3) Standard Chlorine (NJDEP Site 116)
- (4) 1-A Landfill
- (5) Malanka Landfill
- (6) Diamond Shamrock (NJDEP Site 113)
- (7) Koppers Coke
- (8) NJDEP Site 47
- (9) NJDEP Site 48
- (10) NJDEP Site 51
- (11) NJDEP Site 58
- (12) NJDEP Site 103
- (13) NJDEP Site 131

Contaminated Materials

Figure 5.7-1

DNAPL and impacted groundwater from the two sites to the river. In a rulemaking published in the *Federal Register* on September 19, 2007, the Standard Chlorine site was added to the Superfund program's National Priorities List (NPL). It is not currently clear to what extent remediation of Standard Chlorine will be coordinated with that of Diamond Shamrock. Remediation will likely include construction of a perimeter hydraulic barrier, a groundwater recovery and treatment system, lagoon cleanup, sediment cleanup, surface cover, and stormwater management. As discussed below, this site is also known as COPR Site 116.

The 155-acre Koppers Coke site was a coke plant and coal tar processing facility. Portions of the site are still in active use, including a marine loading facility along the eastern portion of the site. Existing contamination includes: dense and light non-aqueous phase liquids (NAPL); impacted soils (primarily VOCs in the former coke and light oil refining areas and PAHs in the former coal tar processing areas); and surface disposal of process and waste materials (coal tar waste, chromium-contaminated fill, and oil deposit areas). A remedial action work plan (RAWP) was submitted to NJDEP in 1997 and approved in 1998. Additional remedial actions have subsequently been proposed and approved. Proposed remedial actions include placement of a cover of processed dredged material (PDM), a subsurface barrier system along the Hackensack River, and recovery of NAPL. Portions of the RAWP have been implemented, including the installation and operation of a NAPL recovery system.

The sediments in portions of the Hackensack River adjacent to the Diamond Shamrock, Standard Chlorine, and Koppers Coke sites have been impacted by a variety of contaminants. The Peninsula Restoration Group prepared a Hackensack River Study Area Remedial Investigation Work Plan in December 2005 to determine the extent and type of contamination present in these sediments, and to conduct a screening level ecological risk assessment. Removal of river sediments within 50 feet of shore to a depth of three feet adjacent to the Diamond Shamrock and Standard Chlorine sites was proposed as part of the most recent work plans. Remedial investigation activities have been implemented in this area.

JANA CORPORATION AND OTHER POTENTIAL CHROMIUM SITES

The Jana Corporation property is located immediately west of the Hackensack River bordering the northern boundary of the existing Amtrak railroad embankment (see Figure 5.7-1). As discussed in Chapter 5.1, this site is currently occupied by an industrial linens supply business operated by Royale Linen. The site was formerly part of the Kearny Drum Dump, is listed as a CERCLIS-No Further Remedial Action Planned (NFRAP) site and includes institutional controls. NFRAP sites that were considered for NPL listing but were not ultimately listed due to the large number of heavily contaminated sites that were eligible for listing. Additionally, this site is one of the chromite ore processing residue (COPR) sites mentioned above, and is also referred to as "Site 50." There are nine COPR sites in the vicinity of the Portal Bridge—Sites 47, 48, 50, 51, 58, 103, 113, 116, and 131 (see Figure 5.7-1). The primary contaminant of concern at these sites is hexavalent chromium.

Site 47 (Goldie's Auto Parts), Site 48 (Clinton Cartage), and Site 58 (Nicole's Warehouse) are located to the west of the Diamond Shamrock site and are occupied by commercial businesses. Site 113 (Diamond Shamrock) and Site 116 (Standard Chlorine) were discussed in more detail above. Site 51 is located adjacent to the Jana Corporation property. Site 103 comprises a portion of the Amtrak Access Road, which runs parallel to the existing Northeast Corridor. Site 131 is a north-south access road adjacent to the Hackensack River.

Although each of these nine COPR sites have different property owners, they are all part of an investigation and remediation effort in accordance with a Consent Order between NJDEP and the representatives of the Diamond Shamrock property owner. Based on information provided during the DEIS comment period, these sites have been thoroughly characterized and remedial investigation reports are under review by NJDEP.[1] While remedial actions have not yet been implemented, caps have been installed at each site to limit hexavalent chromium exposure.

LANDFILLS

Several closed landfills are located immediately adjacent to the Amtrak right-of-way, including the 1-A Landfill west of the Hackensack River and the Malanka Landfill east of the Hackensack River. These landfills generally operated prior to rigorous environmental regulations and some were closed prior to current stricter requirements. Even at landfills that restricted the placement of contaminated materials, if excavation were to be required in these filled areas, the potential for contamination to be encountered is generally high.

SUMMARY OF EXISTING CONDITIONS

In summary, the project area and vicinity were historically primarily open water or marshland. Although some wetland areas remain and have not apparently been filled, most of the area has been filled, in a controlled or uncontrolled manner, some as sanitary or industrial landfills. Many of the filled areas, some of which apparently used chromite ore processing residue or other unknown fill, were developed with industrial activities that are known to have caused subsurface contamination and others may be contaminated, but have had little or no investigation. As such, the next sections evaluate potential contaminated material impacts of the project alternatives (including the No Action Alternative), particularly those related to soil disturbance. Additionally, within the right-of-way, certain build alternatives would require some disturbance of structures or equipment containing lead-based paint, asbestos containing materials) or PCB-containing oils.

D. NO ACTION ALTERNATIVE

The No Action Alternative would not involve any construction activities as part of the Portal Bridge Capacity Enhancement Project. Section B of Chapter 3, "Project Alternatives," describes several regional transportation projects that are expected to be completed by 2030. In addition, there are several other projects which could be completed by that time that might affect contaminated materials. In the future without the project, remediation of sites already known to regulatory agencies (for example, the Standard Chlorine Superfund NPL site remediation is expected to be completed by 2015) will continue. Cleanup is anticipated to occur by 2016 of at least the roughly 90 acres of the Koppers Coke site which is the location of NJ TRANSIT's planned Kearny Yard. Cleanup in the Hackensack River may be required as a result of the combined sediment impact study that is being performed for the Koppers Coke, Standard Chlorine, and Diamond Shamrock sites.

[1] *Remedial Investigation Report, Hydrogeologic Subregion I (Sites 50, 51, 58, 103 and 131)*, dated November 2001, submitted to NJDEP on behalf of Tierra Solutions.

Remediation of the various chromium contaminated sites within the study area may occur pursuant to the new NJDEP policy and in accordance with the Consent Order. Remediation of other contaminated sites within the project study area (not currently slated for remediation) may or may not occur by 2030 depending on the final investigations or projects not related to the Portal Bridge Capacity Enhancement Project.

E. PROBABLE IMPACTS OF THE BUILD ALTERNATIVES

As discussed in Chapter 3, "Project Alternatives," four feasible build alternatives (Alternatives FE, FS, DE, and DS) have been identified and Alternative DS is the preferred alternative. Although the final extent of subsurface disturbance associated with the build alternatives has not yet been fully determined, it would occur in areas with varying degrees of contamination. Contaminated materials are known or likely to be present both within the right-of-way as well as in sites adjacent to or proximate to the right-of-way. Construction of the proposed project would involve some demolition, relocation or other disturbance of existing structures and excavation, disturbance, and likely removal for off-site disposal of some existing soil. Dewatering of groundwater would most likely also be required in specific locations, depending on the final determination of the types of foundations to be used for bridges, viaducts, and retaining walls, as well as the ultimate construction methods.

The presence of contaminated materials only presents a threat when exposure to these materials occurs. Even then a health risk requires both a complete exposure pathway to the contaminants and a sufficient dose to produce adverse health effects. The most likely route of exposure would be through breathing volatile/semi-volatile compounds or particulate-laden air released during demolition, excavation, and construction activities. Following construction of the proposed project, there would be no significant potential for continued exposure. In order to prevent such exposure pathways and doses, the proposed project would include appropriate health and safety and investigative/remedial measures (conducted in consultation with the appropriate regulatory authorities). These measures are discussed more fully below, but would include:

- Procedures for pre-construction removal of asbestos and appropriate management of LBP and of PCB-containing equipment.
- Additional subsurface investigation, both to study sites not yet investigated and to better characterize soils to be disturbed by project construction.
- Development of a Construction Health and Safety Plan (CHASP) that would include detailed procedures for managing both known contamination issues (e.g., soil handling at known contaminated areas) and any unexpectedly encountered contamination issues. The CHASP would also include procedures for avoiding the generation of dust that could affect the surrounding community and the environment as well as the monitoring necessary to ensure that no such impacts are occurring.

EXISTING STRUCTURES

ASBESTOS-CONTAINING MATERIALS (ACM) MANAGEMENT PLAN

Proper handling, removal, and disposal of ACM is governed by both federal and state requirements. Appropriate engineering controls (e.g., wetting and other dust control measures) to minimize asbestos exposure would be implemented prior to and throughout the project.

LEAD-BASED PAINT (LBP) MANAGEMENT PLAN

If lead-coated surfaces are present, an exposure assessment would be performed to determine whether lead exposure would occur during construction of the project including demolition and/or removal of the existing Portal Bridge. If the exposure assessment were to indicate the potential to generate airborne dust or fumes with lead levels exceeding health-based standards, a higher personal protection equipment standard would be employed to counteract the exposure. In all cases, appropriate methods to control dust and air monitoring, as required by OSHA, would be implemented.

PCB-CONTAINING EQUIPMENT

Suspected PCB-containing equipment (e.g., transformers, electrical feeder cables, hydraulic equipment, and fluorescent light ballasts) that would require disturbance or relocation for construction of the proposed project would be surveyed and evaluated. PCB-containing equipment that would be disturbed by the work would be removed and disposed of in accordance with applicable federal and state regulations. Generally, unless suspected PCB-containing equipment is labeled to be "non-PCB," it must be tested or assumed to be PCB-containing and disposed of at properly licensed facilities.

SUBSURFACE DISTURBANCE

As described earlier, the entire project area has to some degree the potential for the presence of subsurface contaminated materials. The right-of-way itself likely includes fill of unknown origin. Known contaminated sites would be affected by any of the proposed build alternatives, including COPR Sites 50, 103, and 131. While not expected based on the conceptual design, it is possible that COPR Sites 58 and 51 could also be affected. The Diamond Shamrock property (Site 113) would be affected to varying degrees in each alternative. In addition, there are many known contaminated properties in the vicinity of the proposed project site.

All build alternatives would require substantial subsurface disturbance in specific areas such as the locations of bridge piers and abutments, retaining walls, catenary support structures, etc. Due to the presence of compressible soils, deep foundations for the river crossing and the approach spans would be necessary. While the final selection of foundations would occur during preliminary engineering, options include drilled shafts, cast-in-place concrete pipe piles, driven concrete or steel piles or spread footings on mass concrete pedestals. Some of these options, such as the drilled shafts, could require the disposal of soil up to 90 feet or more below the existing ground elevation. Others such as the driven piles do not produce the spoils associated with drilled shaft construction. In areas where the proposed track would be placed on new or existing embankment, the potential for exposure to contaminated materials is much less. However, deeper excavations would still be required for catenary and signal support structures, communication towers, and possibly new or relocated utilities.

Among the alternatives, the only substantive difference with respect to contaminated materials is that Alternative FS and Preferred Alternative DS would require subsurface disturbance and construction within the Diamond Shamrock property. Alternative FE would require the use of a portion of the site for construction staging, but this would not involve any subsurface disturbances and all alternatives may use the site for staging given its waterfront access. The construction of Alternatives FS and DS would consist of embankment as well as the approach span for the river crossing and would include subsurface disturbance. Therefore, these alternatives have a greater potential to disturb contaminate materials than the alternatives that

use the existing Portal Bridge alignment for the southern bridge. As discussed below, Alternatives DS, FS, and FE (and potentially DE) would also require greater coordination with NJDEP with respect to the ongoing investigations and remediation of the Diamond Shamrock property. All four build alternatives have the potential to require some disturbance to the existing 1-A and Malanka Landfills. As the project proceeds, Amtrak and NJ TRANSIT will continue to coordinate with the property owners and the regulatory agencies to minimize disturbance to these landfills.

Detailed procedures would be incorporated into the project's construction documents to govern excavation and other activities that would entail subsurface disturbance. For the various types of materials (e.g., chromate-contaminated soils, historic fill, putrescible wastes, native materials), the types of commitments that would be included in the specifications (both to meet all applicable legal requirements and to minimize potential impacts) are described below. Preventive measures would be undertaken to protect the safety of the public, construction workers, as well as the broader environment. These measures would include subsurface investigations at properties that have not yet been sufficiently investigated. All work would be performed in accordance with applicable local, state, and federal requirements.

AGENCY CONSULTATION AND ADDITIONAL INVESTIGATION

To the extent that many of the sites bordering the right-of-way are known to NJDEP and have had some degree of investigation, once limits of disturbance for the chosen alternative are determined, NJDEP (and as appropriate USEPA, NJMC, property owners, and potentially other responsible or affected parties) would be consulted to determine:

- all available environmental information on the portions of the site which would be disturbed by the chosen alternative;
- scope and schedule for any additional planned testing or remediation;
- required health and safety procedures for testing or excavation work in those portions of the site;
- the extent, if any, to which the chosen alternative's proposed disturbance would conflict with or require modification of the proposed remediation of the remainder of the site.

For example, at some of the suspected chromate sites it is anticipated that limited testing has been conducted and testing specific to the areas of project disturbance would be required prior to developing project specifications. However, at sites such as Diamond Shamrock, where more extensive testing has been conducted and remediation is already contemplated within the areas to be disturbed by the proposed project, NJDEP may require the project scope to incorporate or at a minimum not conflict with existing or to-be-constructed remedial measures. As necessary additional subsurface testing (to guide health and safety procedures and measures necessary to protect both workers and the community, and to indicate whether special handling or disposal of soils or excavated materials is likely to be required) would be performed. Subsurface sampling within the right-of-way has not yet been performed. Once proposed areas of disturbance are known, subsurface investigations would be performed.

CONSTRUCTION HEALTH AND SAFETY PLAN (CHASP)

Prior to commencing site disturbance, a Construction Health and Safety Plan (CHASP) would be prepared to address both the known contamination issues (based on the existing information) and contingency items (e.g., finding unexpected chromate contamination or petroleum storage

tanks). The CHASP would describe in detail the health and safety procedures to minimize exposure of contaminated materials to workers and the public. The hazards would be evaluated by determining the known or suspected subsurface contaminants of concern and their chemical and physical characteristics, and health hazards would be considered within the potential exposure associated with the work to be performed. The CHASP would be developed in accordance with OSHA regulations and guidelines. The CHASP is expected to include designation and training of appropriate personnel, monitoring for the presence of contamination (e.g., buried tanks, drums or other containers, sludges; or soil which shows evidence of potential contamination, such as discoloration, staining, or odors) and appropriate response plans. To prevent the potential off-site transport of dust, dust control measures would be implemented as necessary during all earth-disturbing operations.

WASTE MANAGEMENT

The project documents would address procedures for stockpiling, testing, loading, transporting (including truck routes), and properly disposing of all excavated material requiring off-site disposal. Excavated material would be characterized to classify the material (e.g., as contaminated waste, petroleum-contaminated wastes, chromate-contaminated soils, historic fill containing construction and demolition debris, or uncontaminated native soils). The extent and parameters of this testing are dependent on the requirements of the waste disposal facilities, each of which may have different requirements for representative waste sampling and laboratory analysis prior to accepting material for disposal.

Wastes containing contaminated materials require special handling, storage, transportation, and disposal methods to prevent releases that could impact human health or the environment. Depending on the nature of the material, federal, state, and local regulations require the use of special containers or stockpiling practices for on-site storage of the material to prevent the release of contaminated materials to the environment. The federal, state, and local departments of transportation have requirements for transportation of wastes containing contaminated materials. Facilities that receive contaminated materials require federal, state, and local permits to accept the waste, and generally require that specific representative waste sampling and laboratory analysis protocols be conducted prior to accepting material for disposal.

GROUNDWATER

Where dewatering is required, it is possible that the water would require treatment prior to its discharge to surface water or existing sewers. Prior to any such discharge, the water would be tested and discharge, whether to surface water or sewer, would only be conducted in accordance with applicable requirements including NPDES for discharge to surface water and local and state requirements for sewer discharge. ✷

A. INTRODUCTION

WATERFRONT REVITALIZATION PROGRAM POLICIES IN NEW JERSEY

The federal Coastal Zone Management Act (CZMA) of 1972 was established to encourage coastal states to manage development within the states' designated coastal areas, reduce conflicts between coastal developments, and protect resources within the coastal zone. Requirements for federal approval of coastal zone management programs and grant application procedures for development of the state programs is included in 15 C.F.R. Part 923, Coastal Zone Management Program Development and Approval Regulations, National Oceanic and Atmospheric Administration (NOAA). The Coastal Zone Management Act requires that federal activities within a state's coastal zone be consistent with that state's coastal zone management plan. New Jersey has a federally approved coastal zone management program, which is administered by the New Jersey Department of Environmental Protection (NJDEP).

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NJDEP regulates coastal zone activities under N.J.A.C. Section 7:7E, Coastal Zone Management (CZM) Policies. Section 7:7E sets forth substantive rules of the NJDEP regarding the use and development of coastal resources, to be used primarily by the Department's Land Use Regulation Program in reviewing permit applications under the Coastal Area Facility Review Act (CAFRA), N.J.S.A. 13:9A-1 et seq (as amended to July 19, 1993), Wetlands Act of 1970, N.J.S.A. 13:9A-1 et seq, Waterfront Development Law, N.J.S.A. 12:5-3, Water Quality Certification (401 of the Federal Clean Water Act), and Federal Consistency Determinations (307 of the Federal Coastal Zone Management Act). Because the Portal Bridge Capacity Enhancement Project is outside the CAFRA Zone, consistency with CAFRA is not addressed in this assessment.

PROJECT STUDY AREA WITHIN THE COASTAL ZONE

N.J.A.C. 7:7E-1.2 defines coastal waters as any tidal waters of the State and all lands lying thereunder. Coastal waters of the State of New Jersey extend from the mean-high-water (MHW) line out to the three geographical mile limit of the New Jersey territorial sea, and elsewhere to the interstate boundaries of the States of New York, Delaware, and the Commonwealth of Pennsylvania. The definition includes all lands outside of the coastal area as defined by CAFRA, extending from the MHW line of a tidal water body to the first paved public road, railroad, or surveyable property line (existing on September 26, 1980) generally parallel to the waterway, provided that the landward boundary of the upland area shall be no less than 100 feet and no more than 500 feet from the MHW line. The definition also includes all areas containing tidal wetlands and the Hackensack Meadowlands District as defined by N.J.S.A. 13:17-4.

The Portal Bridge Capacity Enhancement Project is within the coastal zone, because the project is within the Hackensack Meadowlands District. As such, consistency with applicable Coastal Zone Management Policies must be evaluated.

B. NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION COASTAL ZONE MANAGEMENT POLICIES

The DEIS included an analysis of NJDEP CZM Policies dated February 2008. The NJDEP released updated CZM regulations in April 2008; the FEIS has been revised to reflect these changes. Table 5.8-1, located below, lists all of the NJDEP CZM Policies and specifies whether or not each policy applies to the Portal Bridge project. A full analysis of the NJDEP CZM Policies with respect to Special Areas identified in the coastal zone—as described in New Jersey Administration Code (N.J.A.C. Subchapter 3: Special Areas, Section 7:7E)—and whether the project alternatives are consistent with these policies is located in Appendix C, "Ecology." Only the policies that are relevant to the project alternatives are discussed in Appendix C. For a complete set of policies presented in N.J.A.C. 7:7E please refer to: www.state.nj.us/dep/landuse/njac/7-7e.pdf.

Also included in Appendix C is correspondence from NJDEP regarding the CZM analysis. NJDEP has determined that the Portal Bridge project is consistent with NJDEP's CZM policies, provided that all applicable conditions are met. The conditions include appropriate mitigation for ecological impacts, financial surety for such mitigation, a mitigation monitoring plan, and design of a waterfront walkway, among other project-specific conditions. The details of these conditions will be addressed in more detail during the permitting phase of the project.

Table 5.8-1
List of CZM Policies

CZM Policy Number	CZM Policy Name	Applicable to the Portal Bridge Project	Not Applicable to the Portal Bridge Project
LOCATION RULES – SPECIAL AREAS			
7:7E-3.2	SHELLFISH HABITAT		X
7:7E-3.3	SURF CLAM AREAS		X
7:7E-3.4	PRIME FISHING AREAS		X
7:7E-3.5	FINFISH MIGRATORY PATHWAYS	X	
7:7E-3.6	SUBMERGED VEGETATION HABITAT		X
7:7E-3.7	NAVIGATION CHANNELS	X	
7:7E-3.8	CANALS		X
7:7E-3.9	INLETS		X
7:7E-3.10	MARINA MOORINGS		X
7:7E-3.11	PORTS		X
7:7E-3.12	SUBMERGED INFRASTRUCTURE ROUTES	X	
7:7E-3.13	SHIPWRECKS AND ARTIFICIAL REEFS		X
7:7E-3.14	WET BORROW PITS		X
7:7E-3.15	INTERTIDAL AND SUBTIDAL SHALLOWS	X	
7:7E-3.16	DUNES		X
7:7E-3.17	OVERWASH AREAS		X
7:7E-3.18	COASTAL HIGH HAZARD AREAS		X
7:7E-3.19	EROSION HAZARD AREAS		X
7:7E-3.20	BARRIER ISLAND CORRIDOR		X
7:7E-3.21	BAY ISLANDS		X
7:7E-3.22	BEACHES		X
7:7E-3.23	FILLED WATER'S EDGE	X	
7:7E-3.24	EXISTING LAGOON EDGES		X

Table 5.8-1 (cont'd)
List of CZM Policies

CZM Policy Number	CZM Policy Name	Applicable to the Portal Bridge Project	Not Applicable to the Portal Bridge Project
LOCATION RULES – SPECIAL AREAS (cont'd)			
7:7E-3.25	FLOOD HAZARD AREAS	X	
7:7E-3.26	RIPARIAN ZONES	X	
7:7E-3.27	WETLANDS	X	
7:7E-3.28	WETLANDS BUFFERS	X	
7:7E-3.31	COASTAL BLUFFS		X
7:7E-3.32	INTERMITTENT STREAM CORRIDORS		X
7:7E-3.33	FARMLAND CONSERVATION AREAS		X
7:7E-3.34	STEEP SLOPES		X
7:7E-3.35	DRY BORROW PITS		X
7:7E-3.36	HISTORIC AND ARCHAEOLOGICAL RESOURCES	X	
7:7E-3.37	SPECIMEN TREES		X
7:7E-3.38	ENDANGERED OR THREATENED WILDLIFE OR VEGETATION SPECIES HABITATS	X	
7:7E-3.39	CRITICAL WILDLIFE HABITATS	X	
7:7E-3.40	PUBLIC OPEN SPACE	X	
7:7E-3.41	SPECIAL HAZARD AREAS	X	
7:7E-3.42	EXCLUDED FEDERAL LANDS		X
7:7E-3.43	SPECIAL URBAN AREAS	X	
7:7E-3.44	PINELANDS NATIONAL RESERVE AND PINELANDS PROTECTION AREA		X
7:7E-3.45	HACKENSACK MEADOWLANDS DISTRICT	X	
7:7E-3.46	WILD AND SCENIC RIVER CORRIDORS		X
7:7E-3.47	GEODETIC CONTROL REFERENCE MARKS	X	
7:7E-3.48:	HUDSON RIVER WATERFRONT AREA		X
7:7E-3.49	ATLANTIC CITY		X
7:7E-3.50	LANDS AND WATERS SUBJECT TO PUBLIC TRUST RIGHTS	X	
USE RULES- GENERAL WATER AREAS			
7:7E-4.2	AQUACULTURE		X
7:7E-4.3	BOAT RAMPS		X
7:7E-4.4:	DOCKS AND PIERS FOR CARGO AND COMMERCIAL FISHERIES		X
7:7E-4.5	RECREATIONAL DOCKS AND PIERS		X
7:7E-4.6	MAINTENANCE DREDGING		X
7:7E-4.7	NEW DREDGING	X	
7:7E-4.8	DREDGED MATERIAL DISPOSAL	X	
7:7E-4.9	SOLID WASTE OR SLUDGE DUMPING	X	
7:7E-4.10	FILLING	X	
7:7E-4.11	MOORING	X	
7:7E-4.12	SAND AND GRAVEL MINING		X
7:7E-4.13	BRIDGES	X	
7:7E-4.14	SUBMERGED PIPELINES		X
7:7E-4.15	OVERHEAD TRANSMISSION LINES	X	
7:7E-4.16	DAMS AND IMPOUNDMENTS		X
7:7E-4.17	OUTFALLS AND INTAKES	X	
7:7E-4.18	REALIGNMENT OF WATER AREAS		X
7:7E-4.19	BREAKWATERS		X
7:7E-4.20	SUBMERGED CABLES		X
7:7E-4.21	ARTIFICIAL REEFS		X
7:7E-4.22	MISCELLANEOUS USES		X
7:7E-5	REQUIREMENTS FOR IMPERVIOUS COVER AND VEGETATIVE COVER FOR GENERAL LAND AREAS AND CERTAIN SPECIAL AREAS		X

Table 5.8-1 (cont'd)
List of CZM Policies

CZM Policy Number	CZM Policy Name	Applicable to the Portal Bridge Project	Not Applicable to the Portal Bridge Project
GENERAL LOCATION RULES			
7:7E-6.1	RULE ON LOCATION OF LINEAR DEVELOPMENT	X	
7:7E-6.2	BASIC LOCATION RULE	X	
7:7E-6.3	SECONDARY IMPACTS	X	
USE RULES			
7:7E-7.2	HOUSING USE RULES		X
7:7E-7.3	RESORT/RECREATIONAL USE		X
7:7E-7.4	ENERGY FACILITY USE RULE		X
7:7E-7.5	TRANSPORTATION USE RULE	X	
7:7E-7.6	PUBLIC FACILITY USE RULE		X
7:7E-7.7	INDUSTRY USE RULE		X
7:7E-7.8	MINING USE RULE		X
7:7E-7.9	PORT USE RULE		X
7:7E-7.10	COMMERCIAL FACILITY USE RULE		X
7:7E-7.11	COASTAL ENGINEERING		X
7:7E-7.12	DREDGED MATERIAL PLACEMENT ON LAND		X
7:7E-7.13	NATIONAL DEFENSE FACILITIES USE RULE		X
7:7E-7.14	HIGH RISE STRUCTURES	X	
RESOURCE RULES			
7:7E-8.2	MARINE FISH AND FISHERIES	X	
7:7E-8.4	WATER QUALITY	X	
7:7E-8.5	SURFACE WATER USE		X
7:7E-8.6	GROUNDWATER USE	X	
7:7E-8.7	STORMWATER MANAGEMENT	X	
7:7E-8.8	VEGETATION	X	
7:7E-8.10	AIR QUALITY	X	
7:7E-8.11	PUBLIC TRUST RIGHTS	X	
7:7E-8.12:	SCENIC RESOURCES AND DESIGN	X	
7:7E-8.14:	TRAFFIC	X	
7:7E-8.21	SUBSURFACE SEWAGE DISPOSAL SYSTEMS		X
7:7E-8.22	SOLID AND HAZARDOUS WASTE	X	

Note: For a further explanation of each policy, refer to Appendix C, "Ecology."
Source: www.state.nj.us/dep/landuse/njac/7-7e.pdf

✶

A. INTRODUCTION

On February 11, 1994, President Clinton issued Executive Order 12898, "Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations." This Executive Order is designed to ensure that each federal agency "shall make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations." Executive Order 12898 also requires federal agencies to work to ensure greater public participation in the decision-making process. As discussed in Chapter 3, "Project Alternatives," four feasible build alternatives (Alternatives FE, FS, DE, and DS) have been identified and Alternative DS is the preferred alternative. Analyzed in this chapter are the project's impacts in terms of their effects on minority and low-income populations and the potential for the alternatives to result in any disproportionately high and adverse impacts on those populations.

B. REGULATIONS AND METHODOLOGY

REGULATIONS

The analysis was performed in accordance with the following: U.S. Department of Transportation's (USDOT) Final Order on Environmental Justice, April 1997; the U.S. Environmental Protection Agency's (USEPA) Guidance for Incorporating Environmental Justice Concerns in USEPA's NEPA Compliance Analyses, April 1998; the Council of Environmental Quality's Environmental Justice: Guidance under the National Environmental Policy Act, December 10, 1997; and the FHWA's Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, December 2, 1998.

CEQ GUIDANCE

The federal Council on Environmental Quality (CEQ), which has oversight of the federal government's compliance with Executive Order 12898 and the National Environmental Policy Act (NEPA), developed its guidance to assist federal agencies with their NEPA procedures so that environmental justice concerns are effectively identified and addressed. Federal agencies are permitted to supplement this guidance with more specific procedures tailored to their particular programs or activities, as USDOT has done.

The CEQ's document provides guidance on consideration of environmental justice in each phase of NEPA (i.e., scoping, analysis of impacts, and issuance of a Record of Decision). In brief, the CEQ methodology involves collecting demographic information on the area where the project may cause high and adverse effects; identifying low-income and minority populations in that area using census data; and identifying whether the project's high and adverse effects are disproportionately high and adverse on the low-income and minority populations in comparison to its effects on other populations. Any disproportionately high and adverse effects on minority

and/or low-income populations should then be one of the factors the federal agency considers in making its finding on the project and issuing a Record of Decision.

USDOT'S FINAL ORDER ON ENVIRONMENTAL JUSTICE

This environmental justice assessment also follows USDOT's Final Order on Environmental Justice, which establishes the procedures for USDOT to use in complying with Executive Order 12898. The order applies to all of USDOT's operating administrations, including FRA. As set forth in the order, the sponsoring agencies must take steps to determine whether the project would have disproportionately high and adverse effects on minority and low-income populations. "Disproportionately high and adverse effects" are defined as adverse effects that are predominantly borne by a minority population and/or low-income population or will be suffered by the minority and/or low-income population and are appreciably more severe or greater in magnitude than the adverse effects that will be suffered by the non-minority or non-low-income population.

In making determinations regarding disproportionately high and adverse effects on minority and low-income populations, mitigation and enhancement measures that will be taken and all offsetting benefits to the affected minority and low-income populations may be taken into account, as well as the design, comparative impacts, and relevant number of similar existing system elements in non-minority and non-low-income areas. As set forth in the USDOT's Final Order on Environmental Justice (at Section 8.b.), "In making determinations regarding disproportionately high and adverse effects on minority and low-income populations, mitigation and enhancement measures that will be taken and all offsetting benefits to the affected minority and low-income populations may be taken into account, as well as the design, comparative impacts, and relevant number of similar existing system elements in non-minority and non-low-income areas." The analysis below therefore focuses on significant adverse impacts, and considers the population affected by those impacts. The mitigation of significant impacts is also considered. If a program or activity would have a disproportionately high and adverse effect on minority populations or low-income populations, it will only be carried out if: (1) further mitigation measures or alternatives that would avoid or reduce the disproportionately high and adverse effect are not practicable; (2) a substantial need for the program, policy, or activity exists, based on the overall public interest; and (3) alternatives that would have less adverse effects on protected populations that would still satisfy that need would either have other adverse social, economic, environmental, or human health impacts that are more severe, or would involve increased costs of extraordinary magnitude.

USEPA GUIDANCE

USEPA's guidance on conducting an environmental justice analysis follows the same methodology as the CEQ guidance, which was discussed above.

METHODOLOGY

To identify minority and low-income populations within the project study area, demographic information was obtained from the U.S. Census Bureau for the year 2000. The U.S. Census Bureau allows the collection of information using various geographic units such as census tracts, block groups, and blocks. For the purposes of this analysis, two different geographic units were used. Population and race information were collected using the block level, the smallest geographic unit for which these data are available. Data for median household income and poverty status were collected using block group level data, the smallest geographic unit for which the income and poverty data are available.

IDENTIFICATION OF MINORITY COMMUNITIES

The guidance documents define minorities to include American Indian or Alaskan natives, Asian, Pacific Islanders, Black, or Hispanic persons. In identifying study areas with minority residents, the total percentage of minority residents was estimated by adding together all residents who are any of those racial groups. Data from the U.S. Census Bureau were used to determine the population characteristics for each of the study areas. The following information was collected for each block group in the study areas:

- *Data on racial and ethnic characteristics:* The population in each block group in the study area was characterized using the following racial categories provided in the 2000 Census: White, Black, Asian, and "Other." In addition to racial characteristics, the 2000 Census also includes information on Hispanic origin, which is considered to be an ethnic rather than racial characteristic. People of this ethnic category can be any race.
- *Total percentage of minority population:* Because Hispanic residents may be of any race, people who characterized themselves as White, Black, Asian, and Other in the 2000 Census may be non-Hispanic or Hispanic. To determine the total number of minority residents in each block group, the number of Black, Asian, Other, and Hispanic Whites were tallied.

A study area may be concluded to be a "minority community" when the percentage of minorities in a study area is "meaningfully greater" than the minority percentage of the general population or when the percentage of minorities in the community exceeds 50 percent.[*] It should also be considered in the analysis that the minority population of Hudson County, New Jersey is greater than 50 percent of the general population—65 percent, according to year 2000 Census information.

IDENTIFICATION OF LOW-INCOME COMMUNITIES

Data from the U.S. Census Bureau were also used to determine the population characteristics for each of the study areas. The percent of households living below poverty level was used to determine the low-income population in a given block group. For households, the U.S. Census Bureau defines a household as all people who occupy one housing unit. Accordingly, a household may include related family members and any unrelated people who share a housing unit. Because the CEQ guidance does not suggest a threshold to be used in identifying low-income populations, areas with a proportion of low-income households that is meaningfully greater than in Hudson County were considered to be low-income. In Hudson County, approximately 15 percent of the population lives below the federal poverty threshold, therefore, for this environmental justice analysis, any census block group in the study area with more than 15 percent of its population in poverty is considered to be a low-income area.

After identifying the communities of concern, the next steps in this environmental justice assessment include:

- Identifying the significant adverse impacts in each community;
- Determining whether significant impacts would disproportionately occur mostly within communities of concern;

[*] Section 1-101, Appendix A, *Guidance for Federal Agencies on Key Terms in Executive in Executive Order 12898, Environmental Justice: Guidance Under the National Environmental Policy Act*, Council on Environmental Quality, December 10, 1997.

- Comparing the severity of the adverse impacts in various communities to determine if the impacts are disproportionately severe in communities of concern;
- As appropriate, considering mitigation measures and alternatives to the proposed action.

C. EXISTING CONDITIONS

IDENTIFICATION OF STUDY AREAS

The study area boundaries for the environmental justice impact analysis are the same as those for the land use analysis. As explained in Chapter 5.1, "Land Use and Social Conditions," the study area is located in Hudson County and includes the Towns of Kearny and Secaucus, however there are very few, if any, residents located in the study area. Table 5.9-1 details the study area's population and economic characteristics in terms of race and ethnicity and poverty status. Census Tract 127 Block Group 9 and Census Tract 197 Block Group 3 include the project study area and surrounding areas. The majority of the residents within these block groups reside outside the project study area; there are few, if any, residents within the project study area. Both the Town of Kearny and the Town of Secaucus have a lower minority population than Hudson County as a whole. Approximately 40 percent of the population of the Town of Kearny and roughly 30 percent of the population of the Town of Secaucus are minority, which is a smaller proportion than in Hudson County as a whole (65 percent). In addition, neither of the towns have a higher proportion of low-income households than in Hudson County as a whole. The Town of Kearny has 8.7 percent of households below the federal poverty level, and the Town of Secaucus has 7.3 percent of households living below the federal poverty level, both of which are below the percentage for households living below the federal poverty level in 1999 for Hudson County as a whole (15.3). Based on this data, the study area is neither populated nor minority, and the Towns of Kearny and Secaucus that encompasses the study area have a smaller proportion of minority and low-income populations compared to Hudson County as a whole.

Table 5.9-1
Study Area Population and Economic Characteristics

	Population (2000)												Economic Profile (1999)	
		Race and Ethnicity*												
Study Area	2000 Total	White	%	Black	%	Asian	%	Other	%	Hispanic	%	Total Minority (%)	Total** Households	Households Below Poverty Level (%)***
Hudson County	608,975	338,457	55.6	82,098	13.5	56,942	9.4	131,478	21.6	242,123	39.8	64.7	230,546	15.3
Town of Kearny	40,513	30,687	75.8	1,609	4	2,228	5.5	5,989	14.8	11,075	27.3	39.7	13,539	8.7
Town of Secaucus	15,931	12,512	78.5	709	4.5	1,880	11.8	830	5.2	1,953	12.3	29.9	6,214	7.3
Census Tract 127, Block Group 9	2	0	0	0	0	2	100	0	0	0	0	100	1	0
Census Tract 197, Block Group 3	2,288	1,488	65	275	12	374	16.4	151	6.6	316	13.8	43.7	1,027	13.2

Notes:
* The racial and ethnic categories provided are further defined as: White (White alone, not Hispanic or Latino); Black (Black or African American alone, not Hispanic or Latino); Asian (Asian alone, not Hispanic or Latino); Other (American Indian and Alaska Native alone, not Hispanic or Latino; Native Hawaiian and Other Pacific Islander alone, not Hispanic or Latino; Some other race alone, not Hispanic or Latino; Two or more races, not Hispanic or Latino); Hispanic (Hispanic or Latino; Persons of Hispanic origin may be of any race).
** Census Tract 127 Block Group 9 and Census Tract 197 Block Group 3 include the project study area and surrounding areas. The majority of the residents within these block groups reside outside the project study area.
*** Percent of individuals with incomes below established poverty level. The U.S. Census Bureau's established income thresholds for poverty levels defines poverty level.
Source: U.S. Census Bureau, Census 2000.

D. ENVIRONMENTAL EFFECTS OF THE PROPOSED PROJECT

There are no direct adverse effects on residential land uses in the study area, and as described in Chapter 5.1, "Land Use and Social Conditions," there are few, if any residents in the project study area. The assessment below outlines the impacts that could potentially affect the minority and/or low-income populations in the Towns of Kearny and Secaucus and in Hudson County as a whole.

As discussed in previous chapters of this FEIS, the proposed project is not expected to result in adverse impacts to land uses, visual resources, transportation, air quality, or contaminated materials. The project would be expected to improve air quality and transportation. The potential for adverse impacts to open space, noise and vibration, cultural resources, ecological resources, and construction were identified and are further analyzed in this section to determine if these adverse impacts would disproportionately affect minority communities. In addition, the direct displacement of businesses as discussed in Chapter 5.1 was also considered with respect to environmental justice.

OPEN SPACE

As described in the Open Space section of Chapter 5.1, "Land Use and Social Conditions," the Laurel Hill Park is located within the project study area and Hudson County and the NY/NJ Baykeeper recently purchased a 14.9-acre parcel adjacent to the existing park. Hudson County, in partnership with the New Jersey Meadowlands Commission (NJMC) and the NY/NJ Baykeeper, may construct a new boardwalk and/or fishing pier along the shoreline of this new park parcel. The remainder of the parcel will not be accessible to the public. This parcel is located between the Northeast Corridor right-of-way and the New Jersey Turnpike overpass and associated right-of-way; the New Jersey Turnpike separates the 14.9-acre parcel from the existing Laurel Hill Park. As discussed in Chapter 5.1, this parcel of land was purchased in part with Green Acres funding. While the park is located in Secaucus, which is neither minority nor low-income, it is likely that residents from throughout Hudson County utilize the existing park facilities and will use the accessible portions of the new park parcel. Since Hudson County includes minority and low-income communities (and is, as a whole, 65 percent minority) this analysis has conservatively assumed that minority and/or low-income populations will use the existing and future park facilities.

The Portal Bridge project would not result in adverse impacts to the existing park. All four build alternatives would require the permanent acquisition of 2.0 acres of the 14.9-acre parcel to accommodate the approach to the new northern bridge. Additionally, as described below, all project alternatives (including the No Action Alternative) would have an adverse noise impact on the planned boardwalk in the new park parcel. As described in previous chapters of this FEIS, NJ TRANSIT and Amtrak will coordinate with Hudson County, NJMC, and other stakeholders to develop appropriate mitigation measures for the loss of this planned open space area. New Jersey's Green Acres Program requires special coordination at the State level. Appropriate mitigation or other compensatory measures will be developed in conjunction with Hudson County and other involved stakeholders once an alternative is selected. Because the adverse open space impact would affect all users of the park, the project would not result in disproportionately high impacts to minority or low-income communities.

NOISE AND VIBRATION

All of the project alternatives (including the No Action Alternative) would result in an adverse noise impact on the planned expansion of Laurel Hill Park. This is a result of the park's proximity to the existing rail corridor and bridge. As discussed in Chapter 5.5, "Noise and Vibration," the extent of the new park parcel that would be affected by noise impacts in excess of FTA's noise impact criteria would vary minimally with each project alternative. None of the alternatives would result in adverse noise impacts at the existing publicly-accessible Laurel Hill Park. To mitigate any potential long-term adverse noise effects, the project sponsors would work with Hudson County and other stakeholders on the design and implementation of the planned boardwalk and fishing pier. Based on the conclusions of the noise and open space analyses, the project would not result in any disproportionately high or adverse impacts on the minority or low-income populations of Hudson County.

CULTURAL RESOURCES

All of the build alternatives would result in adverse impacts to cultural resources in the study area, specifically, four architectural resources and one archeological resource. These impacts were discussed in Chapter 5.2, "Historic Resources." None of these adverse impacts to cultural resources would constitute a disproportionately high and adverse impact on the minority or low-income populations of Hudson County.

ECOLOGICAL RESOURCES

Chapter 5.6, "Ecology," included an assessment of the project's potential to adversely impact ecological resources within the study area. All four of the build alternatives would have the potential to adversely impact ecological resources such as wetlands and open water areas. Mitigation measures will be determined in conjunction with the appropriate natural resource agencies. None of these adverse ecological impacts would constitute a disproportionately high and adverse impact on the minority or low-income populations of Hudson County.

CONSTRUCTION-RELATED EFFECTS

The construction of any of the build alternatives would involve a lengthy and complex process, with many disruptive and intense activities occurring simultaneously. The project site is, however, heavily buffered by open space, wetlands, and industrial properties and located away from residential neighborhoods. As described in Chapter 6, "Construction Impacts," most of the adverse construction-related would affect the study area's ecological resources including wetlands, open water, and benthic habitat. Mitigation measures have been proposed to minimize adverse effects on these resources. Measures have also been proposed to mitigate any potential adverse effects from the disturbance to contaminated materials, archaeological resources, and historic structures. None of these impacts would disproportionately affect minority or low-income populations.

Typically, construction projects and construction vehicles can negatively impact residential neighborhoods through increased traffic and noise levels, reduced air quality, or temporary loss of access or community disruption. These types of impacts may impact minority and/or non-minority populations depending upon the demographics of the communities surrounding the project site. The Portal Bridge project is not expected to result in these types of adverse impacts to residential neighborhoods. As described in Chapter 5.1, "Land Use and Social Conditions," and Chapter 6, "Construction Impacts," the project site is generally surrounded by wetlands, open space, vacant land and industrial property. The only nearby use that would be considered

sensitive to construction is Laurel Hill Park. As previously discussed, there are plans to expand public access within the newly-purchased park parcel. However, this public access may not be completed before construction of the Portal Bridge project begins. The existing Laurel Hill Park would not be adversely affected by construction activities due to its distance from the project site. Additionally, noise from the adjacent New Jersey Turnpike would continue throughout the construction period and would partially mask any increase in noise due to the proposed construction activities. Since the construction activities planned adjacent to the expanded park (i.e., the eastern approach to the northern bridge) would be constructed in the first stage of the project, it is likely that the new components of the park expansion would be completed after the approach structure is in place, thereby minimizing any adverse noise or air quality impacts to park users.

Another concern with typical construction projects is the frequency and intensity of construction vehicle traffic. The Portal Bridge project would minimize adverse impacts to residential neighborhoods (including minority and low-income populations) through the use of designated truck routes, and the availability of barge and rail access to the site. By maximizing the use of rail and barge for the delivery of materials and the removal of debris, truck activity would be kept to a minimum. Where truck delivery is required, the proximity of the project site to the New Jersey Turnpike and Belleville Turnpike would minimize the adverse effects on ambient air quality and local noise levels. Therefore, the construction activities associated with the build alternatives would not result in disproportionately high and adverse impacts on minority or low-income populations.

DIRECT DISPLACEMENT IMPACTS

Chapter 5.1, "Land Use and Social Conditions," included an analysis of the businesses that would require relocation under the four build alternatives. As discussed in the chapter, two businesses located adjacent and to the north of the existing Northeast Corridor right-of-way would require relocation. One business would be affected in all alternatives for the approach to the northern bridge while the other would be affected by three of the four alternatives. A preliminary assessment of the characteristics of the businesses to be displaced and their "uniqueness" was performed. The initial analysis concluded that these businesses to not possess unique characteristics that would restrict relocation. As explained in Chapter 5.1, "Land Use and Social Conditions," all displaced businesses would be relocated and therefore it is not expected that any jobs would be lost as a result of the project. Additional information about these businesses will be obtained as the project proceeds. No disproportionately high and adverse impacts on minority or low-income populations would result from these business displacements.

E. CONCLUSION ON DISPROPORTIONATE IMPACTS

Based on the composition of the project study area, the type and extent of the potential adverse impacts, and the proposed mitigation measures, the project would not result in any disproportionately high and adverse impacts to low-income or minority populations. ✷

A. INTRODUCTION

This chapter describes the construction process for the build alternatives and assesses the potential environmental impacts associated with these activities. Any of the four build alternatives (Alternatives DS [preferred], DE, FE, and FS) would likely be constructed using the same general construction sequencing and methods. Provided in Section B of this chapter is an overall description of the construction sequencing for the build alternatives. Section C includes a description of the construction methods and equipment that would be used to complete each of the key project elements, in addition to materials delivery and debris removal. The potential environmental impacts and mitigation measures are analyzed in Section D. Unlike the analysis of permanent environmental impacts presented in Chapter 5, this analysis addresses the potential for temporary impacts that could occur during the construction period.

The construction means and methods presented in this chapter are based on the current conceptual engineering design and the project sponsors' past experience on similar projects. While the construction techniques ultimately utilized for the project may vary, the potential for environmental impacts and types of mitigation measures described herein would likely be the same.

B. CONSTRUCTION SEQUENCING AND SCHEDULE

As stated above, the construction sequencing and methods would be largely the same for any of the four build alternatives. The primary determinant in the construction schedule is whether both bridges are constructed concurrently (as in Alternatives DS and FS) or whether they are constructed sequentially (as in Alternatives DE and FE). Between the DEIS and FEIS, the construction scheduling for the two options (i.e., concurrent or sequential) has been refined to reflect the unique circumstances involved with constructing any of the build alternatives in the project area. Based on direct past experience from the adjacent Secaucus Transfer Station, the construction duration of many tasks has been increased substantially from what was proposed in the DEIS. Unlike other highway or bridge projects, construction of any of the build alternatives involves additional complexity and delays due to the constraints of working within and adjacent to an operating railroad with no viable detour or runaround available. This is especially important for this segment of the Northeast Corridor, the busiest passenger rail line in North America with more than 550 daily scheduled trains.

The key issues that tend to increase the complexity and duration of construction activities for the proposed project include:

- Constraints related to "fouling" (i.e., occupying or obstructing) or potentially fouling the tracks due to the proximity of construction equipment to the operating tracks of the Northeast Corridor. For example, the effective work windows would be reduced to four

hours per day any time cranes, which are required to construct the foundations, are in position where the boom could fall on the tracks or catenary system.

- The existing Northeast Corridor embankment is known to contain large boulders. This requires more time-consuming drilled caissons for foundation support, as opposed to driven piles.
- Much of the construction would occur within areas such as coastal wetlands and open water which will place additional constraints on the available construction techniques and equipment access and would require construction platforms and access roads to be constructed.

In consideration of these constraints the construction schedules were revised since the DEIS (see Figures 6-1 and 6-2, for the concurrent and sequential options, respectively). The construction start date is estimated for late 2011. This is based on the current schedule for preliminary engineering, permits and approvals, and final design, including the necessary procurement and review time. As currently estimated, the concurrent and sequential options would require the following time to construct:

- Alternative DS and FS – 66 months (5 years, 6 months)
- Alternative DE and FE – 94 months (7 years, 10 months)

With a construction start date of November 2011, the concurrent alternatives (DS and FS) would provide revenue service by May 2017. The sequential alternatives (DE and FE) would not begin revenue service until October 2019. Alternatives DS and FS could be constructed more quickly since the southern bridge and its approaches could be constructed in advance of completion of the northern span. For Alternatives DE and FE the tracks on the northern bridge must be in operation and the existing bridge removed before construction of the southern span and its approaches can begin. Because of the similarities in the duck-under and fly-over structures, the type of structure chosen would not substantially affect the construction schedule.

If it is determined that the southern bridge should be built first, for funding or other reasons, then the sequence of the tasks described below would be modified accordingly. Regardless, the type of short-term construction and environmental effects would be similar. Construction in all cases would include six general stages following an initial start-up. The process described below outlines the stages for sequential construction. Under the concurrent construction options, Stage 4 would begin simultaneously with Stage 1 as shown in Figure 6-1. Demolition of the existing bridge (with the exception of the center span) would occur in a 7th stage in the concurrent option after revenue service has begun on both bridges. In the sequential construction, the entire demolition of the existing Portal Bridge is the first step in Stage 4.

The construction process described below has been developed to ensure continuous operations along the Northeast Corridor and at Secaucus Transfer Station. With any construction project of this magnitude and within the environment of an operating railroad with the complexity of the Northeast Corridor, some adverse effects to operations would be inevitable. For purposes of this analysis, the construction stages have been defined by the steps needed to bring each track into operation on their new alignment. The project may, however, be awarded to various contractors through multiple construction packages. This will be determined once the project moves forward into preliminary engineering.

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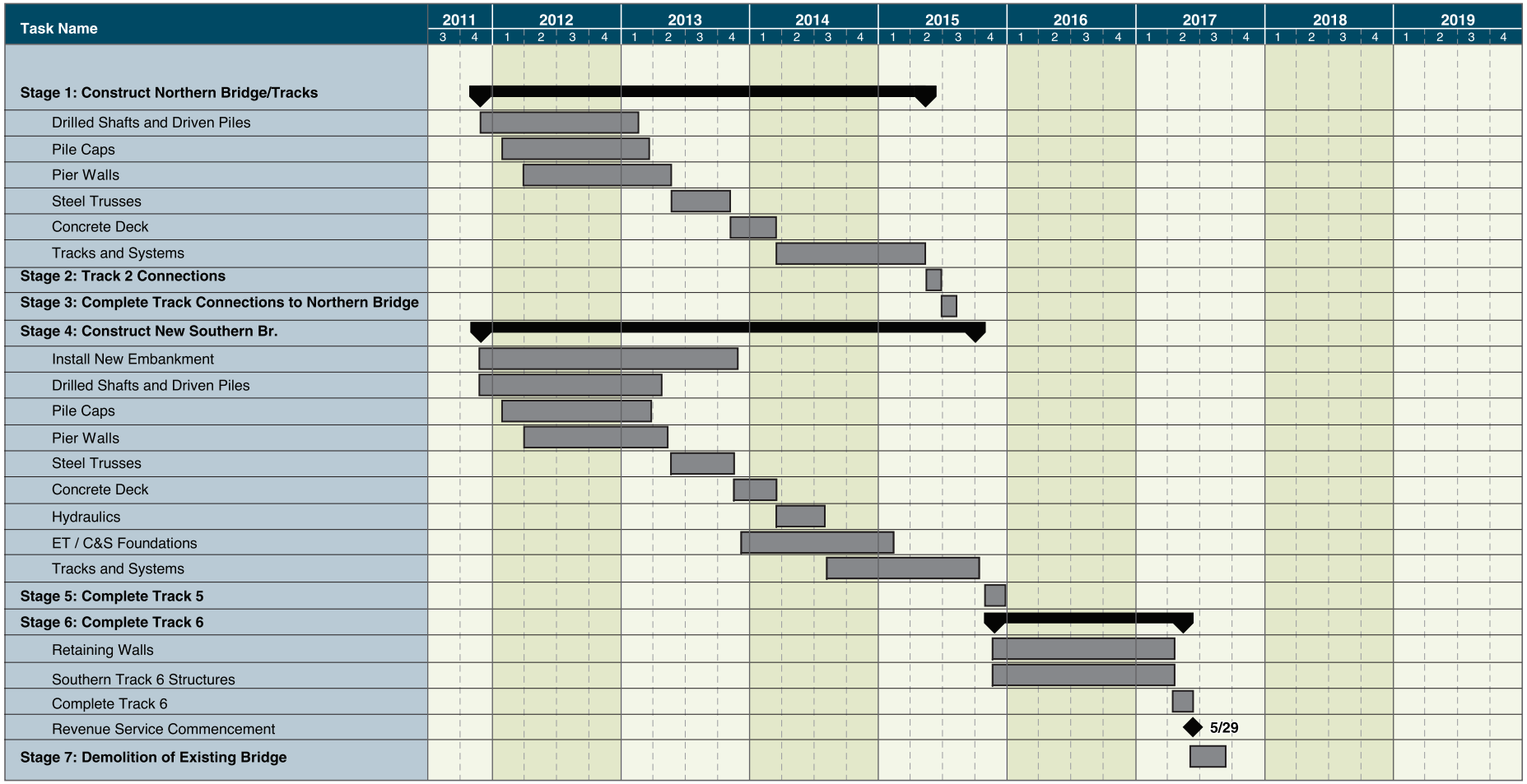

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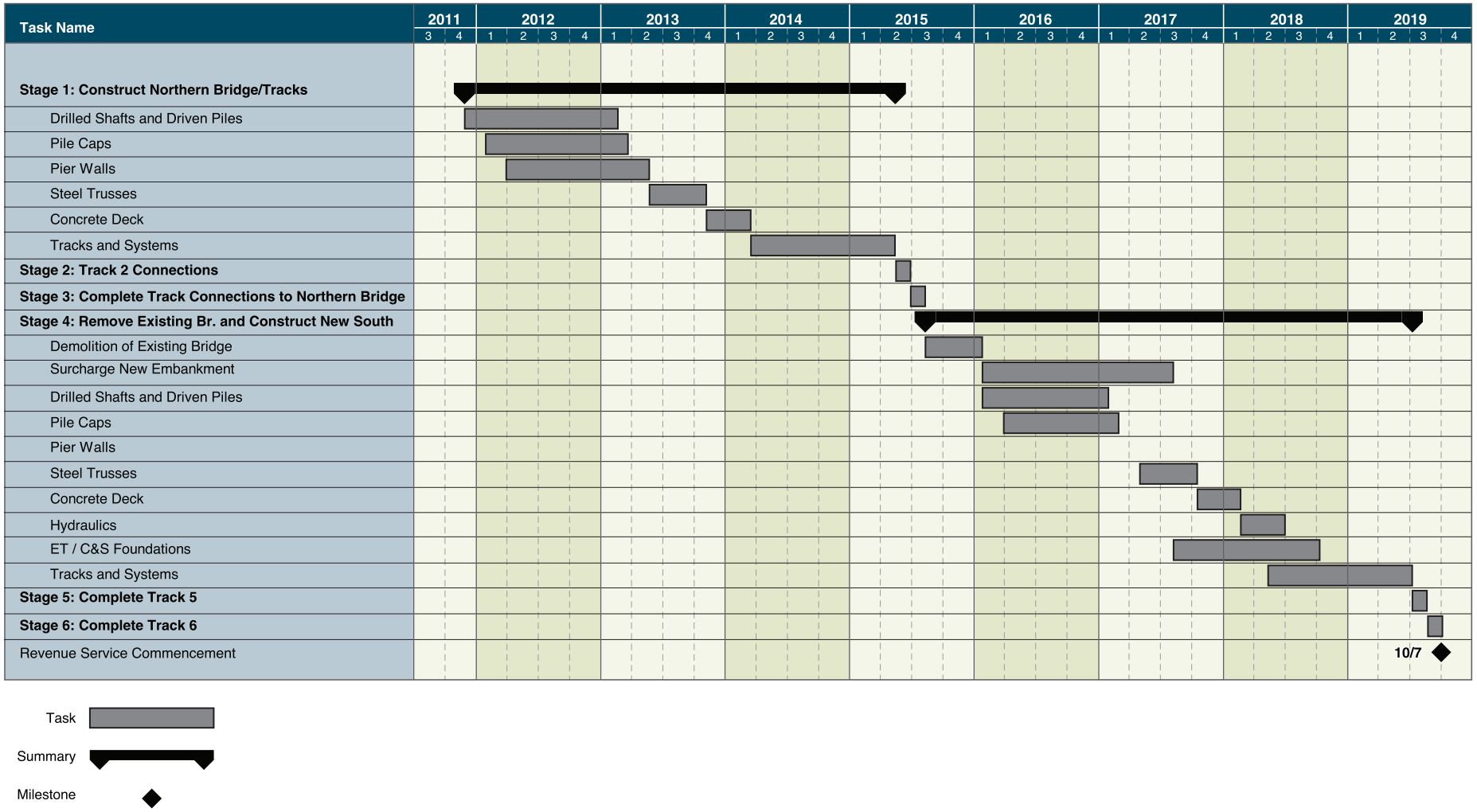
Concurrent Construction Schedule

Figure 6-1



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Sequential Construction Schedule

Figure 6-2

INITIAL START-UP

Prior to initiation of construction, the contractor would establish construction staging areas and mobilize heavy equipment. It is anticipated that construction staging areas could be established on all or a portion of the Jana Corporation property, the Professional Environmental Systems property, and the vacant Diamond Shamrock property. Additionally, access to the eastern side of the Hackensack River would likely be provided by the Boonton Line right-of-way and New County Road. Heavy equipment needed for the early stages of construction (such as cranes) would be brought to the site during this stage.

This phase would include the work necessary to relocate any infrastructure conflicting with or new infrastructure needed for the construction of the selected build alternative, including relocation of Amtrak's 138,000 volt (138 kV) power line. This phase would also include construction of required wooden deck work platforms adjacent to proposed structural elements, construction of required wooden deck finger docks into the river to enable barge delivery of materials, construction of treatment plants to address contaminated soil and water generated by the foundation work for structural elements, and the relocation of any interments that may be found following further investigation of the Historic Cemeteries of Hudson County.

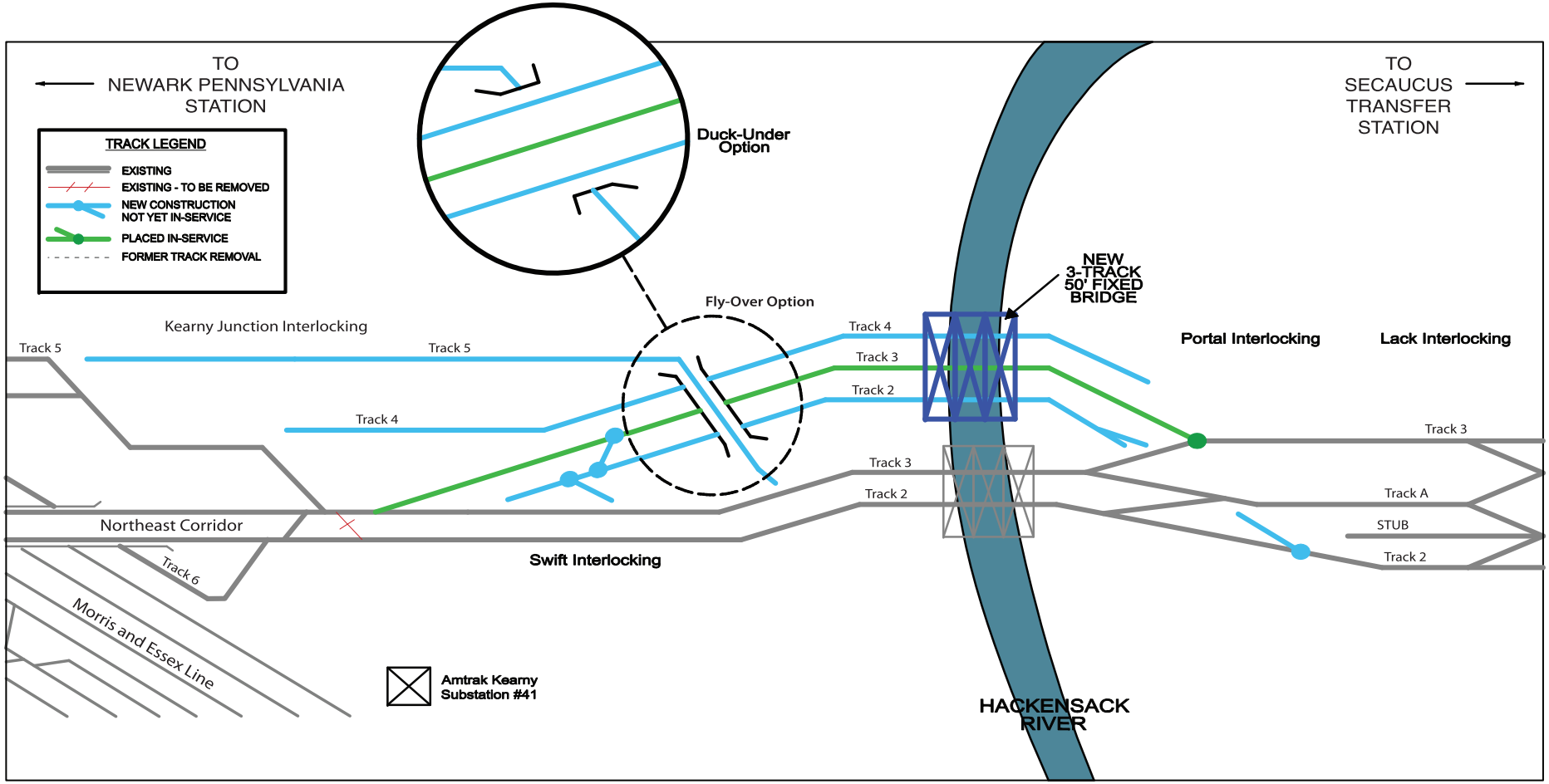
During this initial start-up stage, the existing Portal Bridge (including Tracks 2 and 3) would be in service.

STAGE 1: CONSTRUCT NORTHERN BRIDGE AND TRACK 3 INFRASTRUCTURE

During this stage, the construction of the northern bridge and its approaches would be completed along with all work necessary to bring the new Track 3 into service (see Figure 6-3a). This work would be performed off-line to minimize disruption to Northeast Corridor service. This would include the new northern bridge, its approach structures, and connections to the Northeast Corridor. The structural work needed for the duck-under or fly-over structure would also be completed during this stage. Specifically, Stage 1 would include the following steps:

- Construct new northern fixed bridge at a height of 50 feet above mean-high-water (MHW);
- Construct bridge approach structures on the eastern and western sides of the Hackensack River;
- Structural work needed for the grade-separated crossing of Track 5 and the Northeast Corridor (fly-over or duck-under), along with construction of a portion of Track 5 to the clearance points of the operating track;
- Construction of new Tracks 2, 3, and 4 off-line to the clearance points of the operating track. This would include new crossovers between Tracks 2 and 3 at Swift Interlocking, Tracks 2 and A at the new Portal Interlocking, and the west end of Track 8;
- Remove existing crossover connecting Track 2 to Track 3 at Swift Interlocking;
- Cut and throw Track 3 to new alignment at Swift Interlocking and install crossover from Track 3 to Track 4 with divergent leg of turnout not in service.

Once these steps are completed, Track 3 would be on its new alignment on the northern bridge and would be in service. Track 2 on the existing Portal Bridge would also be in service. Existing Morris & Essex Line connection to Track 3 stays in service. Stage 1 would last approximately 42 months.



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Construction Sequence Template Stage 1

Figure 6-3a

STAGE 2: TRACK 2 CONNECTIONS

Stage 2 would include all the work necessary to bring the new Track 2 into service via the new northern bridge (see Figure 6-3b). The following steps would be required:

- Remove Track A west of crossover to Track 3 from service;
- Construct remaining portion of crossover from Track 3 to Track A;
- Remove out-of-service portions of Track 3 on both sides of the river;
- Re-align Track A onto Track 3 alignment over Boonton Line bridge;
- Complete southern leg of east approach structure for Tracks A and 2;
- Remove existing crossover from Track 3 to Track 2 at Swift Interlocking;
- Cut and throw Track A to new alignment at Portal Interlocking;
- Install new crossover connecting Track 3 to Track 2 at Swift Interlocking;
- Cut and throw Track 2 to new alignment at Swift Interlocking.

Upon completion of these steps, the new Track 2 would join the new Track 3 in service on its new alignment on the northern bridge. Eastbound operations on Track 2 will move to Track A at Portal Interlocking. Three platform tracks (3, A, and B) would be in service at Secaucus Transfer Station. The existing Portal Bridge would no longer be in use. Stage 2 would last approximately 1.5 months.

STAGE 3: COMPLETE TRACK CONNECTIONS TO NORTHERN BRIDGE

Stage 3 would include track work and would complete the connections for all tracks from Secaucus Transfer Station to the new northern bridge (see Figure 6-3c). The work would include the following steps:

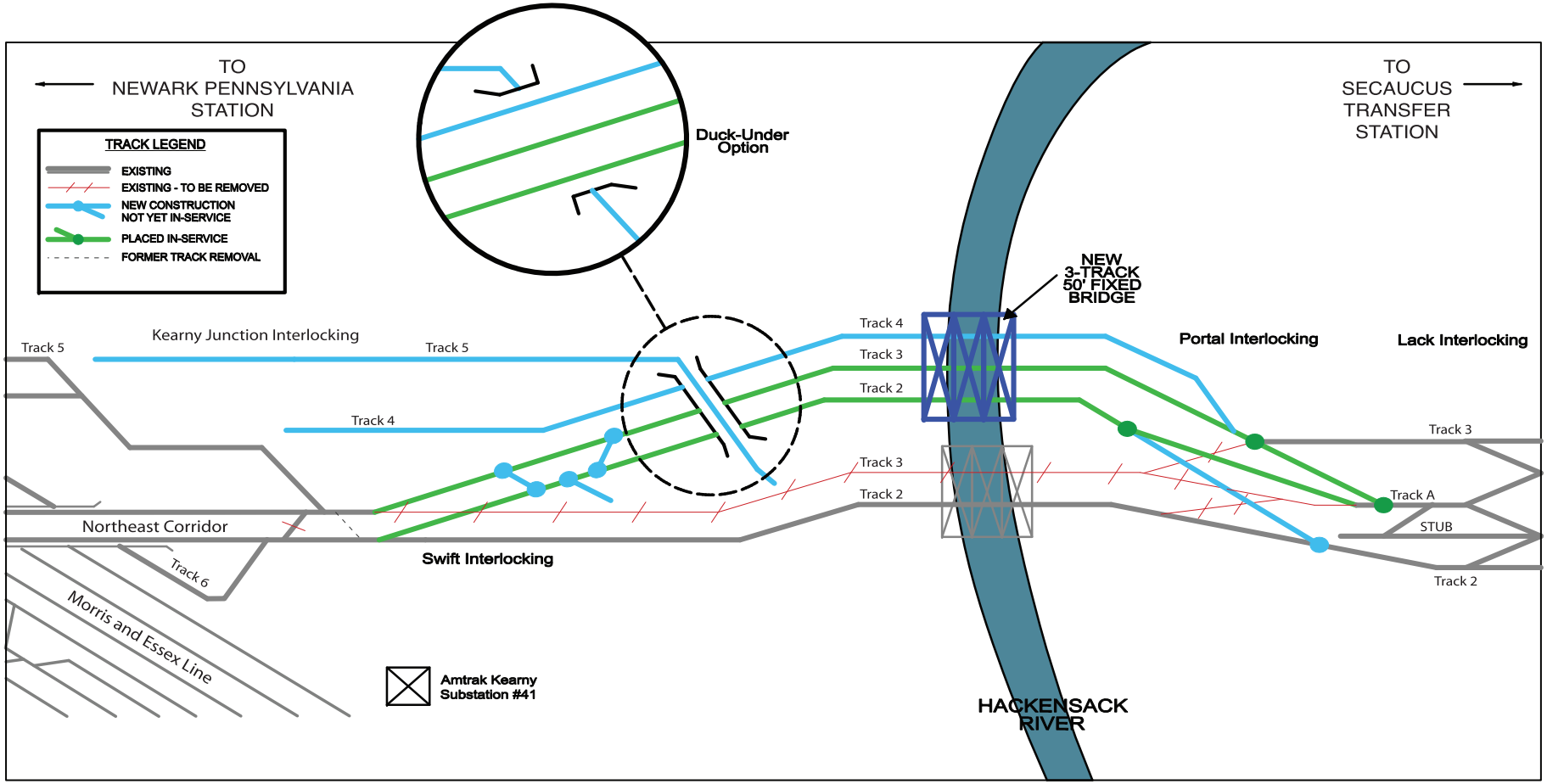
- Remove any remaining old Track A to existing bridge;
- Build all new Track 2 structures over Boonton Line and east;
- Construct adjacent viaduct structure for Track 5 to Track 2 connection;
- Realign Track 2 to new alignment at Portal Interlocking;
- Put Track 2 at Portal Interlocking back in service.

With this work accomplished, Tracks 2, 3, and A would be in service on their new alignments. All platform tracks at Secaucus Transfer Station would be in service. Stage 3 would take approximately 1.5 months.

STAGE 4: REMOVE EXISTING BRIDGE AND CONSTRUCT NEW SOUTHERN BRIDGE

Stage 4 would include all infrastructure needed to bring Track 5 into operation (see Figure 6-3d). The work in this stage would allow the operation of Track 5 over the new southern bridge and through the grade-separated crossing (allowing the Morris & Essex Line connection via the southern bridge). The following steps would be needed:

- Remove any old existing Track 2 to existing bridge;
- Demolish existing swing bridge;



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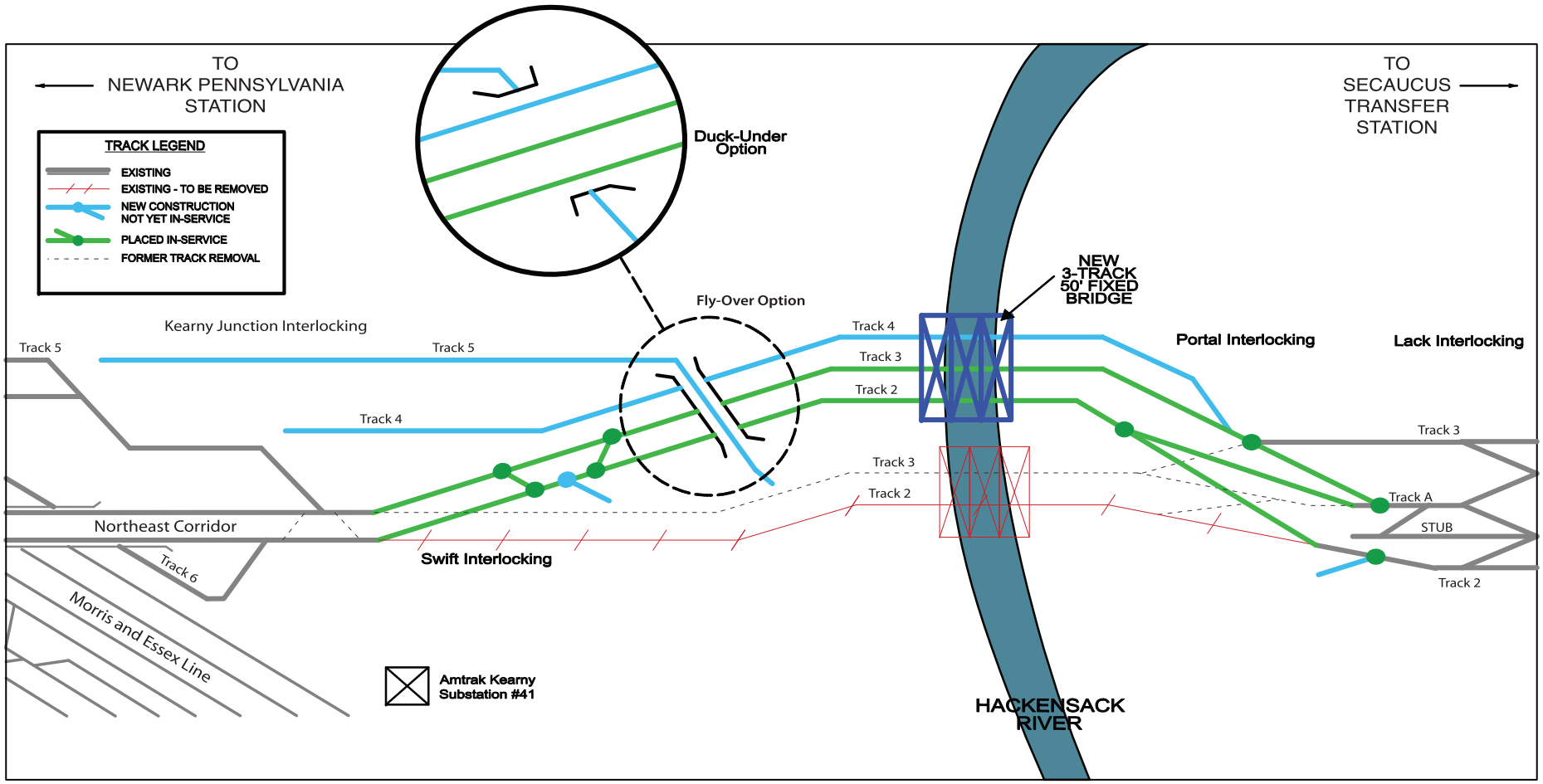
Construction Sequence Template Stage 2

Figure 6-3b



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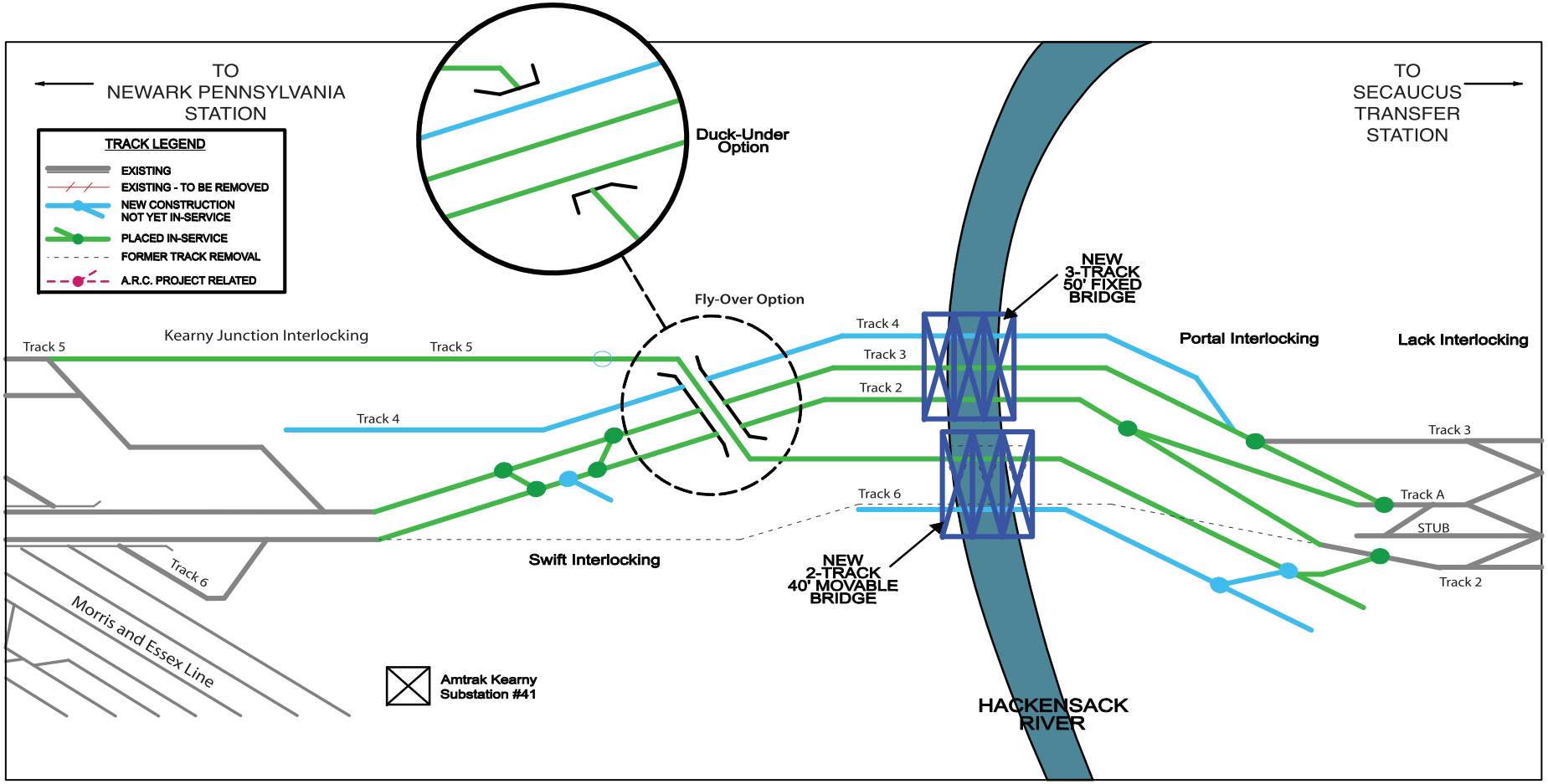
Construction Sequence Template Stage 3

Figure 6-3c



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Construction Sequence Template Stage 4

Figure 6-3d

- Construct new moveable bridge 40 feet above MHW and new approach structures or embankment on both sides of the river;
- Extend construction of new Track 5 from east of duck-under/fly-over through southern bridge and ending at east end of new bridge over the Boonton Line;
- Construct Track 6 from new undergrade bridge over former Erie Arlington Branch ending at east end of new bridge over the Boonton Line;
- Construct connection from Track 5 to Track 2 at Portal Interlocking;
- Cut and throw Track 5 to its new alignment.

Tracks 2, 3, 5, and A would all be in service on their new alignments upon completion of Stage 4. At the end of this stage, all westbound movements from the Northeast Corridor to the Morris & Essex Line need to use the new Track 5 connection since the existing crossover from Track 3 to the Morris & Essex Line would not be available until Track 4 is completed in the next stage. Stage 4 would take approximately 46 months.

STAGE 5: COMPLETE TRACK 4

Stage 5 would include the track work necessary to bring the new Track 4 into operation, as follows (see Figure 6-3e):

- Remove existing crossover from Track 5 to Track 3 at Swift Interlocking;
- Install crossover from Track 5 to Track 4 at Swift Interlocking;
- Put crossover from Track 3 to Track 4 at Portal Interlocking completely into service.

Tracks, 2, 3, 4, 5, and A would all be in service on their new alignments upon completion of Stage 5. Stage 5 would take approximately 1.5 months to complete.

STAGE 6: COMPLETE TRACK 6

Stage 6 would include the work necessary to complete Track 6, as follows (see Figure 6-3f):

- Construct new bridges for Tracks 6 and 8 over Newark and Belleville Turnpikes;
- Install new Track 6 off-line on new alignment, from clearance point at Swift Interlocking to undergrade bridge over former Erie Arlington Branch;
- Install turnouts(s) to future Kearny Yard;
- Construct Track 8;
- Cut and throw Track 6 to new alignment at Swift Interlocking;
- Remove existing turnout from Track 6 to Track 2 at Swift Interlocking.

Upon completion of Stage 6, all tracks would be in service on their new alignments. Stage 6 would require 1.5 months to construct. Construction of all six stages would therefore take a total of 94 months, or approximately 7 years, 10 months.

CONCURRENT CONSTRUCTION SCHEDULE

Under Alternatives DS and FS, construction of the southern bridge (Stage 4) can begin concurrently with construction of the northern bridge (Stage 1). The simultaneous construction of both bridges (i.e., Stages 1 and 4) would result in an approximate savings of 44 months. Under Alternatives DS and FS, Stage 6 would be more complicated and would require additional time from the same stage under Alternatives DE and FE. Under the southern alignment

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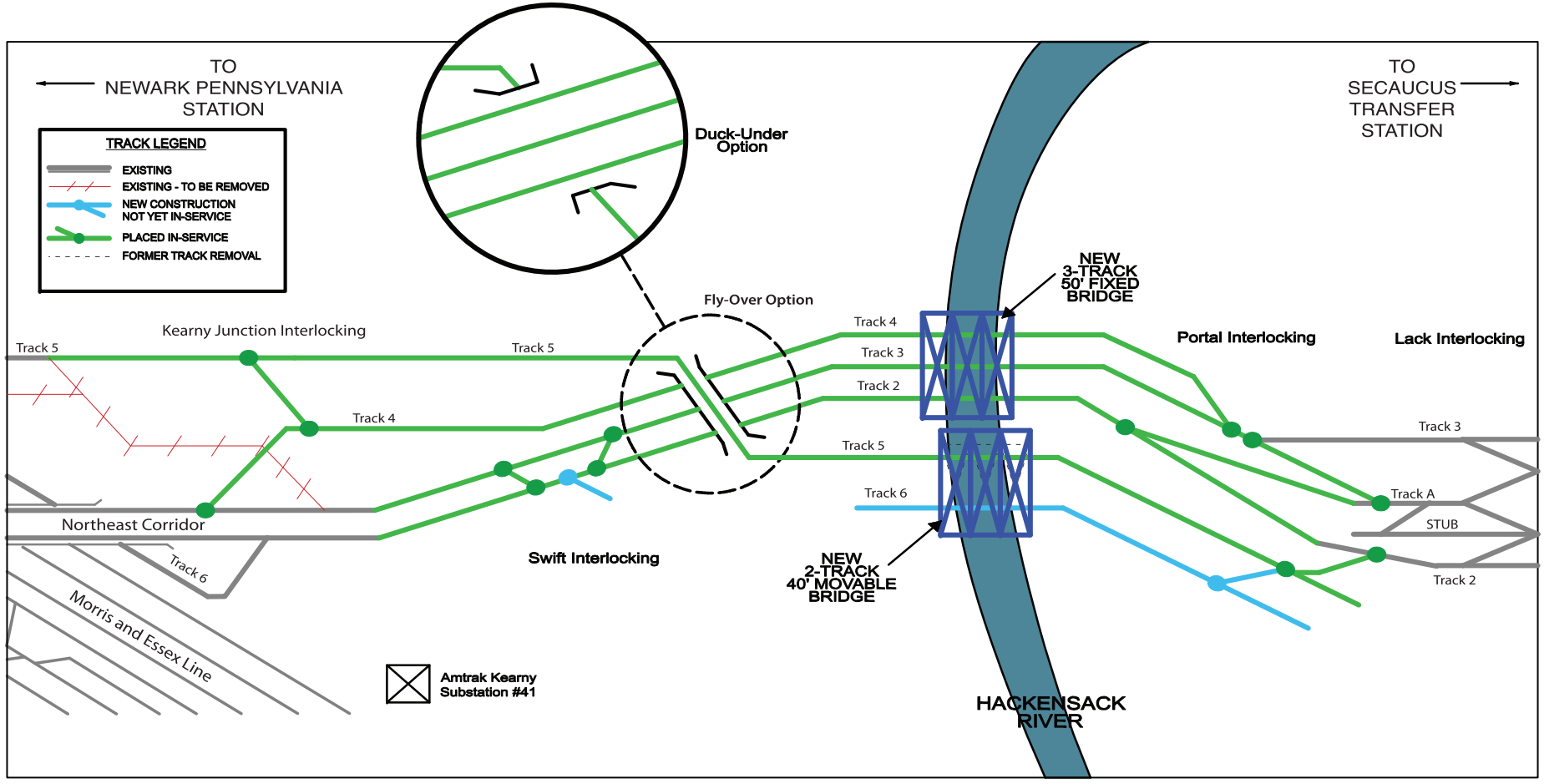

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Construction Sequence Template Stage 5

Figure 6-3e

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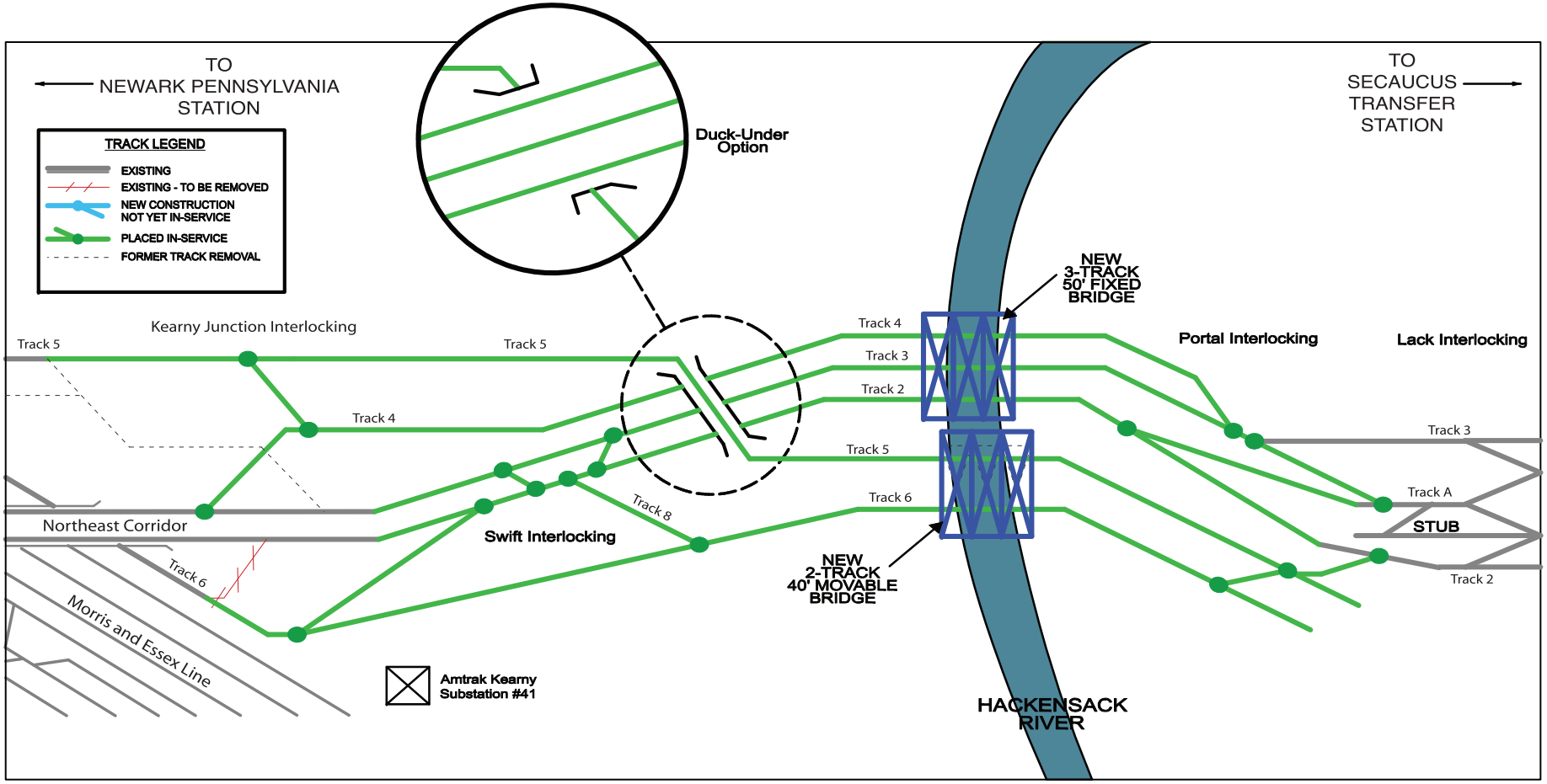

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Construction Sequence Template Stage 6

Figure 6-3f

alternatives, the construction time for Stage 6 would increase by approximately 16 months. Therefore, the overall net difference between the concurrent and sequential construction options would be approximately 28 months, resulting in a 66 and 94 month construction duration, respectively.

C. CONSTRUCTION OF KEY ELEMENTS

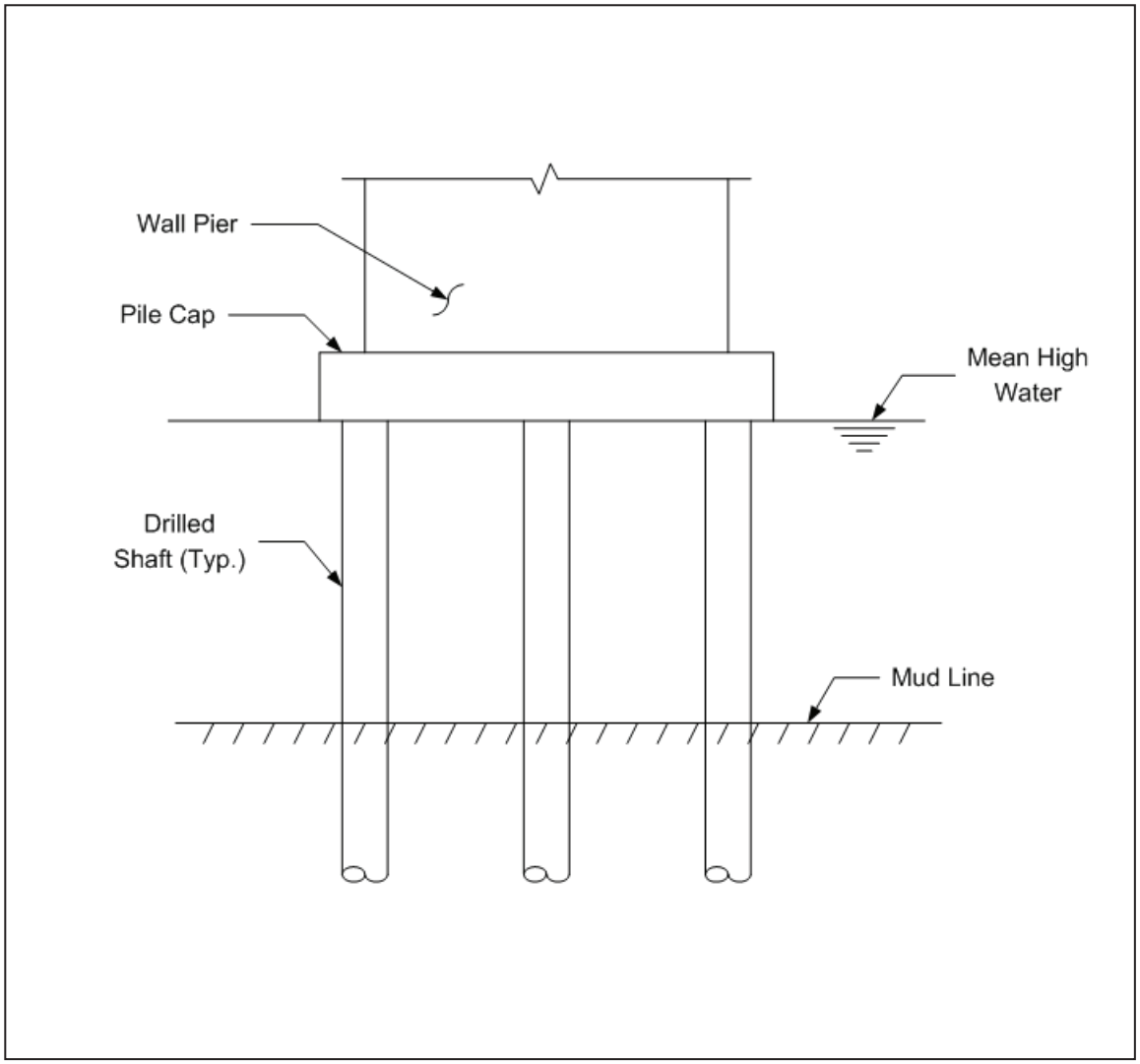
NORTHERN FIXED BRIDGE

The construction of the three-span fixed truss northern bridge would be performed through a series of steps. The first step would be to construct the bridge foundations and piers. The piers in the water would be constructed from barges that would be placed to minimize disruption to marine traffic. It is expected that the piers would be built using drilled caissons as opposed to driven piles. Turbidity curtains would be used to contain river sediments that may be disturbed during caisson drilling. It is likely that three barges would be required for the construction of drilled shafts—one to support the crane, one to store materials, and one to hold the drilling spoils.

There would be a total of four piers for the northern bridge. Two of the piers would be in the Hackensack River, one in the adjacent wetlands on the eastern shore and the fourth pier would be constructed within the Kearny Brackish Marsh on the western shore. The pier on the eastern shore would be constructed from a temporary work trestle, to minimize the disturbance to wetlands in the expanded Laurel Hill Park. The pier on the western shore could be constructed from a small temporary causeway in Kearny Brackish Marsh. The two main piers would consist of 6 12-foot diameter caissons while the side span piers would have 24 4-foot diameter caissons. The drilled shaft construction would take approximately 3.5 months for each pier, including the main piers and the side span piers, for a total of 14 months. Multiple piers could be constructed simultaneously.

Once each set of drilled shafts are in place, a reinforced concrete pile cap would be constructed on top of each set of piers (see Figure 6-4). The first step would be to construct the formwork required to support the pile cap construction. For the river piers, the formwork would be supported by the drilled shafts, which would eliminate the need for cofferdams. Due to the amount of concrete, the pile caps would need to be placed in more than one pour. The formwork would be able to support the first pour. After the first pour has gained adequate strength, it would be used to support subsequent pours. The pile cap construction would take approximately three months per pier for a total of twelve months. Multiple piers could be constructed concurrently. In addition, the pile cap construction step could overlap with the drilled shaft step. For example, masons could be working on placing the pile cap on the first set of completed drilled shafts at the same time as the second set of drilled shafts are being installed.

The next step would consist of the concrete pouring for the piers to support the steel trusses. During this step, construction activity would be above the MHW level. The formwork would be supported by the pier cap. Due to the height of the pier and the amount of concrete required, the piers would be poured in more than one lift. The northern bridge would have four piers with each pier taking approximately three months to construct, for a total of twelve months. Again, construction of the piers could occur simultaneously with other the previous two steps. Overall, construction of the substructure would take approximately 18 months to complete. The construction of the bridge fenders to protect the piers from accidental ship collisions would also be constructed at this time.



Typical Bridge Pier Section
Figure 6-4

While the substructure is being constructed, the superstructure trusses would be fabricated and assembled off-site. The assembled spans, three in total, would be floated in by barge and set into place. Because the river may be too shallow for a barge to directly deliver the side span trusses, the side span trusses may need to be delivered to the center of the river and then launched into position from one of the main river piers. This may require the construction of a temporary bent between the land and water piers to help support the side spans while they are being launched. After the side spans are in place, the center span truss would be floated in by barge and placed onto the main river piers. The erection of the steel superstructure would take approximately 6 months.

After the trusses are in place, the concrete deck would be poured. A cast-in-place concrete deck would take approximately 3 to 4 months to construct. Using precast panels for the deck may reduce the construction time, although the top bracing on the truss would limit the available vertical clearance and may cause interference when the precast panels are being delivered and placed. At this point (approximately 27 months) the northern bridge would be ready for the installation of track and systems, which would take approximately 15 months.

SOUTHERN MOVEABLE BRIDGE

The construction of the southern bridge would be very similar to that of the northern bridge. The substructure of the south bridge would be similar, if not identical, to that of the north bridge. In addition, the construction of the side span trusses would be very similar. Similar to the northern bridge, the southern bridge would have four piers. Two piers would be located in the Hackensack River and two would be upland. The center lift span and the other truss spans would be constructed off-site. The lift towers could also be partially assembled off-site. The side spans, lift span, and towers would be floated in by barge. The towers could be temporarily bolted to the sides of the truss. Once the span is in place, the towers could be disconnected from the truss and then connected to the piers. The hydraulic lift equipment and electrical control systems would then be installed. The total construction time required for the southern bridge would be approximately three years (not including track and systems).

REMOVAL OF EXISTING PORTAL BRIDGE

The removal of the existing Portal Bridge would occur after the northern bridge has been constructed and all train traffic has been diverted from the existing span. The existing swing-span would likely be floated out on barges. The span could be cut in half over the pivot pier and barges positioned on each side of the pivot pier could take half of the span away to be disassembled. The approach girder spans could be lifted off their piers with a crane and placed on a barge for removal. To lighten the spans, the track work could be removed ahead of time.

After the removal of the superstructure, the substructure would be removed. While demolishing the substructure, turbidity curtains would be placed in the river around the work area to control any sediment that might be disturbed. The masonry piers could be broken up using an expansion demolition agent, which would break the piers into smaller and more easily removed pieces without using explosives. This task would entail drilling holes into the piers and injecting an expandable compound, which would place pressure on the masonry piers and cause them to crack and break. The smaller pieces would be removed with a barge mounted crane. The existing timber piles from the pier foundations and fender system would then be removed. These components could either be removed completely or cut off two feet below the mudline. The existing submarine cable, which would be decommissioned upon removal of the existing bridge,

would be severed at each end and abandoned in place. The removal of the existing bridge, substructure, foundations, and fenders would take approximately 6 months.

APPROACH SPANS

The approach structures would be constructed using the following sequence:

- Installation of temporary construction access way. Where the bridge crosses water or wetlands, the temporary construction access way may be placed on a trestle.
- Establishment of construction staging areas. The staging areas would be available to store girders and other construction material, and would be available for preassembling of the girders before they are set in place.
- Construction of required foundations, including drilled shafts, piles, and reinforced concrete pile caps.
- Construction of required reinforced concrete piers and abutments. These would be cast-in-place and may need multiple pours per pier.
- Erection of superstructure. The main girders could be delivered to the project site by barge and then delivered to their required location by truck along the temporary access way. For the shorter spans, the entire girder span may be assembled off site, and then positioned in one section, including girders and cross-frames. The longer and wider spans could be constructed by setting each girder into place and then attaching the required diaphragms or cross-bracing. The girder approach spans would use one of two types of girder arrangements—a deck girder arrangement or a through girder arrangement. Deck girder spans have a cast-in-place reinforced concrete deck, which would be cast after the girders are in place. Through girder spans have a steel deck plate. For the shorter spans, the steel deck plates may be attached while the girders are being assembled off-site, allowing the entire bridge (including girders, deck, and bracing) to be positioned at one time. The deck plate on the longer spans may need to be attached after the girders have been placed.
- Installation of trackwork. Once the girders and initial ballast are in place, the required trackwork including (concrete ties, plates, fastening clips and rail) would be installed. This would be done using a Track Laying Machine (TLM). The TLM would lay concrete ties that are pre-equipped with plates used to affix the sections of rail. Rail would come in quarter-mile long sections of continuously welded steel. The rail would then be fitted into the plates, affixing it to the ties, and clamped into place. In locations where trackwork is placed on embankment, a final layer of ballast would be used to hold the cross ties in place. Elsewhere, the cross ties would be affixed to the steel deck plate.
- Installation of electric traction system. Elements of the electric traction systems would be installed in two ways, depending on the type of structure. Where bridges are used, steel catenary poles would be affixed directly to the bridge structure. Where embankments are used, foundations for the poles would be installed by first excavating holes and then using either pre-cast segments or by pouring concrete into constructed forms. Once the poles are installed, messenger wire, auxiliary wire, and contact wire would be affixed to the poles using a wire train (a train consisting of specialized equipment to reach, install, and adjust the catenary system and transport necessary supplies to the work site).
- Demolition of existing spans.

EASTERN BRIDGE APPROACH

Northern Bridge

All four build alternatives would include 11 150-foot-long spans, extending from the river bridge on the west to the Boonton Line on the east. These would be deck girder spans. The construction would start with a temporary work trestle that would be constructed along the side of the proposed bridge. The necessary drilled shafts would be installed using a rig attached to the front of a crane operating from the temporary work trestle. The substructure would then be constructed as described in the previous section. The deck girders may be delivered to the project site and lifted in place with a crane. Any required cross-bracing or diaphragms would be installed, and the cast-in-place reinforced concrete deck would then be poured. The bridge would be completed (as described above) by placing the required trackwork and completing the required electric traction system work.

Southern Bridge

Alternatives DS and FS would be constructed through the Riverbend Wetland Preserve. For these alternatives, the eastern approach to the southern bridge would consist of 13 150-foot-long spans. These spans would be constructed in a similar manner as the side spans for the northern bridge.

Alternatives DE and FE would be constructed on the existing Northeast Corridor right-of-way by increasing the height of the existing embankment and therefore, new bridge structures would not be required. Construction on these spans would not begin until the northern tracks are completed and all train traffic has been moved onto these new tracks.

Boonton Line

The bridges over the Boonton Line would include two 75-foot-long through girder spans. Because of the shorter spans, the bridges may be able to be constructed entirely off site and then delivered to the project site in one piece. This construction technique may limit the outage time required for the Boonton Line itself, which is still an active track within the work area even though it is no longer operated as a through route. Some of the proposed new tracks would be continued on structure to the east of the Boonton Line. These structures would be deck girders and would be constructed similarly to those of the east approach to the river bridge.

Track 5 to Track 2 Connector

Due to the differences in elevation, Track 5 must be on structure when it connects with Track 2. Track 5 would be carried by deck girder spans and Track 2 would be carried by existing spans (which currently carry Northeast Corridor tracks). At the connection location, the current side of the ballast retainer for Track 2 would be removed to allow room for Track 5 to connect with Track 2.

WESTERN BRIDGE APPROACH

Northern Bridge

All four build alternatives would include a bridge over the open water of the Kearny Brackish Marsh. This crossing would consist of three 150-foot-long spans. A temporary work trestle or causeway may be installed for a location to conduct the construction activity. The remaining construction activities would follow the steps described for the east approach bridges.

Southern Bridge

Alternatives DE and FE would be constructed on the existing Northeast Corridor right-of-way by increasing the height of the embankment, and therefore no new bridge structure would be required. Alternatives DS and FS would be constructed through a portion of the Diamond Shamrock property and construction for Alternative DE would be staged on a portion of this property. (As described in more detail below, any excavated material from the drilled shaft and pile cap construction would be disposed of carefully and in coordination with the appropriate regulatory agencies).

Newark Turnpike and the Belleville Turnpike

The spans over the Newark Turnpike and the Belleville Turnpike crossing would consist of either deck girders or through girders. The girder arrangement is dependent on the amount of clearance required; accordingly, through girders have been proposed where required and deck girders are specified elsewhere. Construction would occur in a manner similar to the bridges previously described, although the vehicular traffic along these roadways must be considered. Some evening or weekend roadway closures may be required when the girders are placed. The roadways would likely remain open to traffic while the piers, abutments, and trackwork are being completed.

Erie Newark-Paterson Branch and the Erie Arlington Branch

These spans cross rail rights-of-way that do not carry active tracks. The clearance required would dictate the layout of the girders (either deck girders or through girders). Construction would proceed as described above, although rail outages would not be an issue in this area since the spans do not cross active tracks.

FLY-OVER / DUCK-UNDER

The construction of the duck-under structure, which is designed similarly to a concrete culvert, would start with placing the foundation. This would include installing the drilled shafts and pouring the footings. The time required for constructing the foundation would be approximately 2 months. After a sufficient amount of the foundation is complete, the construction of the box would begin. The walls and top slab of the duck-under structure may be cast-in-place in an approximately 25-foot section. After one section is complete, the forms could be launched forward to the next section. Each section would take approximately one week to complete. The entire length of walls need not be completed before the start of the top slab construction. To expedite this work, construction could be occurring on two sections of the structure at once, either working from the middle out or from either end in. The time required to complete the entire duck-under structure would take approximately 6 months (exclusive of earthwork).

Similar construction methods would be used for the fly-over structure. The fly-over would be wider than the duck-under and would require larger foundation elements. The time required to construct the fly-over structure would therefore be slightly longer than for the duck-under structure—approximately 9 months (exclusive of earthwork).

Alternative construction methods may be used for the duck-under or fly-over structure, including precast components or precast segments. Precast components would be 15- to 25-foot-long sections of either the walls or the top slab that are cast off site, and then brought in and assembled. The precast sections would be 4- to 6-foot-long sections of the completed box,

including walls and top slab. While these precast methods may reduce construction duration, transporting large precast elements can be problematic due to their size.

BRIDGES OVER ROADWAYS/RAIL LINES

New bridges built over the Newark Turnpike, Belleville Turnpike, and the Boonton Line would require a Maintenance and Protection of Traffic (MPT) plan. The MPT plan for the bridges over the two highways and the rail line would be reviewed and approved by NJDOT and Norfolk Southern, respectively, prior to the start of construction. The project sponsors would also coordinate with Hudson County, as appropriate. The new bridges would likely be erected with limited lane closures and track outages. Much of the work could be completed with active traffic below as long as protective measures are taken to guard against small objects falling into the traffic below. When the new girders are installed and the existing bridge is removed, the highway and rail below the bridge would have to be closed. These closures could be limited to the periods when steel is being moved by a crane. Once the girders are securely on their bearings, traffic would be allowed to pass beneath. For the types of bridges proposed for these locations, the complete road closures are typically limited to 20 minutes and occur each time a new piece is being moved into position. This work would likely be scheduled for nights and/or weekends to minimize disruptions. The removal of the existing substructure and foundations could likely be accomplished with shoulder closures on the highways and no disruption to rail traffic.

EMBANKMENT AND RETAINING WALLS

To achieve the elevation needed for the bridge approaches, much of the track would be raised using small bridge spans over open water areas and existing roadways. In some locations (such as the west approaches to the river spans), the existing track profile would be raised through the use of embankments. These embankments may be constructed entirely of fill material (with side slopes) or, to minimize the footprint of the embankment, they may be retained by precast or poured-in-place concrete retaining walls. Based on conceptual engineering, the majority of the embankments would be built with fill material and have 2:1 side slopes (i.e., the ratio of vertical to horizontal change). The material to be used for the embankments would most likely be delivered by truck. The embankments would be built up by laying and compacting the fill material in approximately one-foot vertical sections. Based on conceptual engineering and costing purposes, it is assumed that precast concrete sheet piling retaining walls would be used. Poured-in-place concrete gravity walls may be preferable in some locations; however, this will not be determined until further engineering is performed. The precast concrete sheet piling retaining walls can be manufactured off site in four-foot widths at various lengths, transported to the job site, and jetted into the existing soil or marsh to minimize ground disturbance. Steel tie-back rods may be used to stabilize the walls given the soft ground conditions.

STAGING AND LAY-DOWN AREAS

Several construction staging and lay-down areas would be considered, depending upon the alternative selected. Two likely areas are the Diamond Shamrock property (owned by Chemical Land Holdings, Inc.) and the property owned by the Jana Corporation (north of the Northeast Corridor and the Diamond Shamrock property). The property owned by the Jana Corporation would ultimately be used for a rail embankment, this property could initially be used as a lay-down area. For Alternative DS and FS, right-of-way would be acquired to allow for the new southern bridge alignment. Additional property beyond the right-of-way would likely be leased

and used for construction staging and lay-down areas. Except for Alternative DE, the project would require right-of-way from Professional Environmental Systems, and the relocation of its business. This site may be used as a construction staging and lay-down once the existing buildings have been removed.

On the east side of the Hackensack River, there are limited locations where a contractor could marshal equipment and materials. Available locations exist on the north side of the existing Northeast Corridor in the vicinity of the Boonton Line. These properties are owned by Hudson County, NJDOT (the New Jersey Turnpike right-of-way), and the Town of Secaucus. On the south side of the Northeast Corridor and to the east of the Boonton Line, the Malanka Landfill (owned by Secaucus Brownfields Redevelopment, LLC) and, if available, a portion of the property owned by PSEG may be available for construction staging and lay-down.

MATERIAL TRANSPORT AND DEBRIS REMOVAL

Material transport and debris removal would be accomplished through a combination of barge, rail, and truck transport. As noted under initial start-up efforts, temporary wooden deck finger docks to enable barge delivery of materials would be constructed on both sides of the Hackensack River. Materials such as aggregate and dry concrete materials for foundation work, steel sheeting, wood for formwork, precast concrete retaining wall panels, steel reinforcement bars, and steel beams for the bridges could all be transported to the project site by barge along the Hackensack River and unloaded in quantities as necessary.

Some materials would need to be delivered by truck. Trucks would use designated truck routes, including the New Jersey Turnpike and the Belleville Turnpike. Embankment material may arrive via truck or barge. The stone for the track subballast and possibly a pre-ballast pad would most likely arrive by truck to ease delivery and installation. Numerous other smaller quantity materials such as pre-wired instrument houses, signal components, and site specific concrete would most likely arrive by truck.

The track components and electrification elements would be delivered using a variety of transport methods. The rail would be delivered using a rail train and would be moved into position using an onsite crane. The TLM, which would arrive each day carrying the needed ties, would be pulled using a bulldozer or another piece of heavy equipment. The final application of ballast would be delivered via ballast train and the track tamped, lined, and surfaced using on track equipment. The electrification of the new tracks would be accomplished with materials delivered in a combination of methods. Where precast foundations are used, those and the steel catenary poles could be delivered by barge due to the quantities needed. As discussed above, once the tracks are built, the stringing of the messenger wire, auxiliary wire and contact wire would most likely be accomplished using a wire train which would bring these materials to the site with this on-track piece of equipment.

Most of the construction and demolition debris would be removed by barge. The existing river bridge structure would be dismantled and removed by barge. Some debris would be removed by truck.

D. POTENTIAL SOCIAL, ENVIRONMENTAL, AND ECONOMIC IMPACTS

This section addresses the potential adverse social, environmental and economic impacts due to construction of the build alternatives. As discussed in Chapter 3, “Project Alternatives,” four

feasible build alternatives (Alternatives FE, FS, DE, and DS) have been identified and Alternative DS is the preferred alternative. Since the No Action Alternative would only require rehabilitation of the existing Portal Bridge and no new major construction activities, it is not analyzed further for construction-related impacts. Generally, the short-term construction impacts of each build alternative are similar since the methods used to construct the river crossings would be the same for each alternative. The difference in the bridge alignments would not substantially alter any of the short-term effects. The approach structures for the southern alignment (Alternative FS and Preferred Alternative DS) would increase the potential disturbance to contaminated materials and wetlands (due to work at the Diamond Shamrock property and Riverbend Wetland Preserve, respectively) but the types of impacts and mitigation measures would be the same as described in other areas with contaminated soil and/or groundwater and wetlands. Therefore, much of the following discussion of potential construction impacts would apply to all alternatives. The analysis below identifies impacts that would occur only under certain build alternatives.

TRANSPORTATION

All four build alternatives would result in unavoidable intermittent and variable impacts to the traveling public during the construction effort. These impacts would most commonly occur during late-night and weekend periods. Every effort would be made to minimize impacts to weekday peak period train operations. Overall, the weekday daytime impacts would be transient and minor since much of the new infrastructure would be constructed off-line north of the existing right-of-way. Impacts to late-night and some weekend train service could be much more variable depending on the specific work being performed. During critical nighttime or weekend work tasks—such as retiring certain track systems and "cutting in" (i.e., put into service) new ones, or commissioning new signal and traction power systems—substantial short-term schedule adjustments to specific scheduled train services would be unavoidable. This is more fully discussed below.

The new northern bridge and its approaches would be constructed before any work commences on the existing alignments. Under Alternatives FS and DS, the southern bridge and its approaches could also be constructed without interfering with the existing Northeast Corridor. During the construction process, the public would be kept informed of temporary changes to train schedules that might affect their travel plans. However, there are currently no practical railroad detour routes around the anticipated construction zone, and none would be available unless certain key elements of other projects are accelerated. Given the nature of this large construction project along a vital transportation corridor, complete mitigation of interim inconveniences to the traveling public would not be possible. They would be kept to a minimum through appropriate interim operations planning. The construction of the Secaucus Transfer Station on this same rail line in the late 1990s provided highly-relevant experience with a large construction project built under traffic. The experience thus gained by NJ TRANSIT, Amtrak, and the contracting community would be used to inform the Portal Bridge construction planning and staging effort. Many of the same proven strategies to maintain train operations throughout the construction process could be applied. Key operational goals would be to: maintain safe railroad operations; help maximize construction efficiency; and mitigate and minimize adverse construction impacts to NJ TRANSIT, Amtrak, and rail passengers—especially during weekday peak periods.

COMMUTER/INTERCITY RAIL

As described above, a majority of the work requiring access to the existing active tracks would take place during weeknights, weekends, and to a limited extent weekday off-peak hours. Since the work would by necessity be concentrated during those times, some adjustments to train operations would be required. Specific key construction events, such as placing a new section of track in service, would require shut-downs of segments of track that are directly and indirectly affected either because they must be physically severed or because they must be fouled by personnel and construction machinery, including Amtrak work trains delivering track materials or providing access to the overhead traction power supply (catenary) system.

There will be some risk of disturbances to normal, scheduled train operations on the Northeast Corridor for as long as there is construction activity underway that could foul the clearance envelope of any active track or tracks, or affect the traction power system and/or the signal system. Therefore, alternatives that have a longer projected construction schedule increase or prolong these risks. Ongoing impairments to the availability of the railroad system between Newark and Manhattan could adversely affect other NJ TRANSIT or Amtrak projects on the Northeast Corridor or adjoining lines. The specific nature of such collateral impacts cannot be predicted but could include local labor or material shortages; a shortage of specialized managerial oversight; availability of specialized railroad equipment such as wire, ballast or rail trains; and the available and required capacity of the railroad itself. Since this portion of the Northeast Corridor is operated near, at, and sometimes in excess of its maximum practical capacity during peak periods, any unplanned weekday daytime or early evening outage is very likely to cause train delays.

Multiple independent projects proposed for PSNY before 2020 could require multiple intermittent or continuous platform outages on a rolling basis. Full availability of the railroad west of the Hudson River could reduce the potential for cascading delay events caused by capacity impairments within PSNY, even though the proposed projects in Manhattan have no direct relationship to the Portal Bridge project. This is because once completed, the improved capacity of the railroad across the Hackensack River would make it possible to somewhat adjust the sequence and timing of train arrivals at PSNY when conditions may require it, whereas today this is extremely difficult.

The number of weekday evening and nighttime (8 PM to midnight) scheduled train movements (both revenue and non-revenue trains) between Newark and New York has increased more than 45 percent over the recent 8-year period from 1999 to 2007—nearly a 5 percent annual rate over the existing Portal Bridge. This growth in off-peak train operations implies that it will become progressively more difficult to schedule construction work windows—when workers and equipment can mobilize and then foul the track clearance envelope in order to construct or cut over new infrastructure.

To the extent that work windows must be shorter, or that more train schedules are impacted by construction, the efficiency of that construction work would decrease and the cost would increase. For example, the average interval between scheduled train movements arriving and departing New York between 11 PM and midnight and operating across Portal Bridge has decreased from 8.5 minutes to 5.5 minutes since 1999.

The above-cited eight-year trend in the number of scheduled post-peak/nighttime train movements includes growth in Amtrak services that—for various reasons—was less than one-

half the rate at which NJ TRANSIT operations expanded. Demand for Amtrak intercity services is accelerating and the carrier has indicated that it plans to respond accordingly.

The number of scheduled train movements strongly correlates with ridership growth. NJ TRANSIT forecasts an overall annual ridership growth of 1.8 percent circa 2015 to 2017 for existing services—i.e., organic ridership growth. NJ TRANSIT cites saturation of Northeast Corridor capacity as a prime reason for the lower growth rate. This lower but still up-trending growth forecast further supports a reasonable expectation that there will be additional increases in scheduled nighttime train movements between Newark and New York beyond the existing situation, even without introducing any new routes/services. In fact, detailed analysis of the recent traffic growth trend indicates that the highest percentage growth in traffic volume has occurred after 10 PM.[1]

Alternatives FE and FS would introduce some additional track outages because of the need to swing structural elements into position above existing, active tracks to construct the flyover. Anytime there is a possibility that the clearance envelope could be fouled by moving or swinging equipment such as a crane, and anytime an object is being hoisted above the tracks, an outage affecting at least one track and potentially one or more adjacent tracks would be necessary.

Therefore, Alternatives DS and FS, which have a shorter construction duration than Alternatives DE and FE, would present less risk with respect to potential adverse impacts to NJ TRANSIT and Amtrak passengers. Due to the complexity of constructing the project in this operating railroad environment, and the possible decreasing availability of work windows in the future, Alternatives DE and FE have a greater potential for the construction period to be extended.

Once the new bridge(s) have been substantially completed and operable segments of the new track, signal, and traction power systems are ready to be cut over, proper operations planning would be critical and specially-modified railroad Operating Plans (train schedules) for critical nighttime and weekend work time periods would be necessary. Properly prepared and adequately announced to railroad personnel and the public, such operating plan adjustments are an effective, accepted, and traditional way of accommodating railroad construction projects.

VEHICULAR TRAFFIC

Adverse impacts to vehicular traffic during construction would be transient and minor. Direct impacts to motor vehicle traffic would be localized and variable. There are no at-grade public highway crossings of the rail line nor would the project intrude within the right-of-way of any expressway. The New Jersey Turnpike over-grade crossing near Swift Interlocking is high enough above the existing top-of-rail that any short-term lane closure would be only to ensure public safety if large construction equipment (e.g., a crane) needs to operate in the immediate area. Temporary, construction-related impacts would be likely at under-grade highway crossings such as the Belleville and Newark Turnpikes that are within the construction zone. Local vehicular access along roadways and driveways to adjacent properties would be maintained throughout construction through the implementation of MPTs, as discussed above.

[1] Between 1999 and 2007, the number of scheduled weekday train movements arriving or departing New York between 10 PM and 11 PM and operating via Portal Bridge increased 114 percent; the number of movements scheduled between 11 PM and midnight increased 57 percent.

Amtrak has extensive experience with bridge rehabilitation and replacement at other locations on the Northeast Corridor. Similar projects have not resulted in modal shifts away from rail service, likely the result of pre-planning and managing train service. In some cases, train schedules were modestly lengthened such that the effect of a localized delay is almost negligible. If the scheduled running time is appropriately adjusted in advance, the revised train schedule is properly published and the reason is communicated to the public, the service essentially continues to operate on time. Other issues that would be addressed, such as adjusting equipment turns or train crew assignments, would be transparent to the traveling public.

LAND USE AND SOCIAL CONDITIONS

As discussed in Chapter 5.1, "Land Use and Social Conditions," there are ecologically sensitive land uses and parkland adjacent to the rail right-of-way. Construction of the build alternatives would require an increase to the size of the rail right-of-way through the study area, which would involve property acquisition and conversion of these areas to a transportation use.

Construction of any of the four build alternatives would require full acquisition of an 11.1-acre industrial parcel on the north side of the Northeast Corridor right-of-way, owned by the Jana Corporation. Acquisition of a 4-acre industrial parcel (owned and operated by Professional Environmental Systems) on the north side of the right-of-way would also be required for all alternatives and would also be used for construction staging. Alternatives DS and FS would also require acquisition of a portion of the Diamond Shamrock site. Alternative FE would require a small portion of the site for construction staging. Given its waterfront location, this site may be useful for temporary construction staging and a construction easement/fee simple interest may be required for all or a portion of the site for any of the build alternatives. The remainder of the businesses in the study area would not be adversely affected during construction of the proposed project.

Construction-related activities would not have a noticeable effect on local land uses, which include open spaces, wetland preserves, vacant parcels, and industrial, transportation, and intermodal uses, as shown in Figure 6-5. Potential construction activities that may temporarily affect these land uses include construction traffic and temporary increases in noise and dust. However, the most disruptive construction activities would be of limited duration, which would minimize the adverse effect on adjacent land uses. The project site is well-served by truck routes, which would limit impacts to sensitive receptors. As described above, access to existing roads and businesses would be maintained through implementation of MPTs. Construction of the build alternatives would not be expected to result in adverse effects on businesses located in the vicinity of the project site with the exception of the two businesses described above which would require permanent relocation. The project would result in temporary jobs for construction workers. Overall, economic conditions in the study area would remain unchanged during the construction period.

HISTORIC RESOURCES

ARCHAEOLOGICAL RESOURCES

As described in Chapter 5.2, "Historic Resources," all build alternatives would involve construction in the area sensitive for human remains and funerary archaeological artifacts relating to the Historic Cemeteries of Hudson County. Detailed plans for the extent of subsurface disturbance are not yet available, and therefore the potential effects of the construction on the

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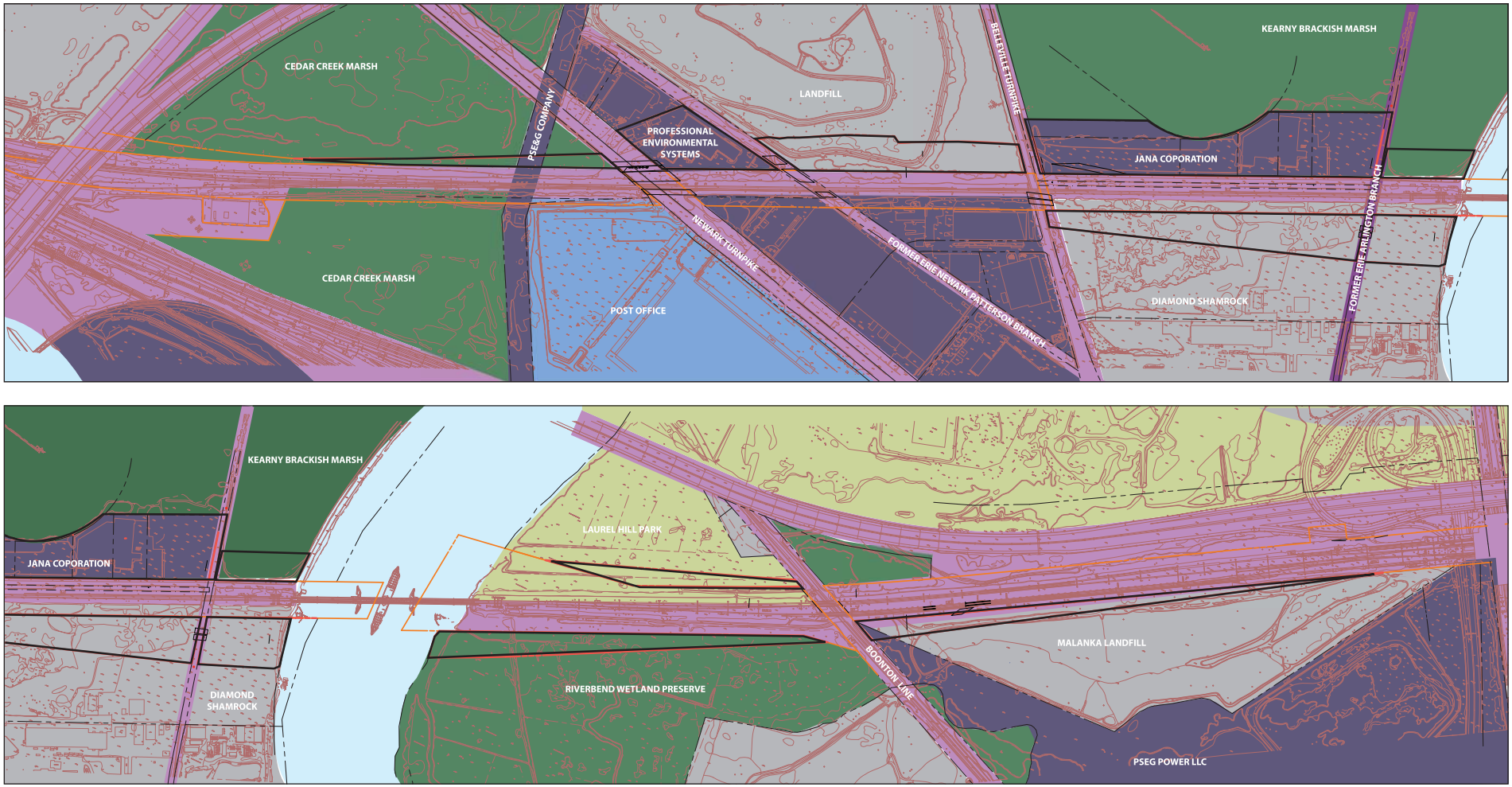


- *Required Property Acquisitions for all Alternatives*
- *Park*
- *Industrial*
- *Environmental Conservation*
- *Institutional*
- *Transportation*
- *Vacant/Brownfield/Landfill*
- *Under Construction*

NJ TRANSIT
PORTAL BRIDGE CAPACITY
ENHANCEMENT PROJECT

Adjacent Land Use
Figure 6-5

Historic Cemeteries of Hudson County area of archaeological sensitivity cannot yet be fully determined. To develop a more refined understanding of how the project could affect archaeological resources, ongoing consultation mandated by Section 106 will continue with the NJHPO to investigate further the presence of significant resources and to develop appropriate mitigation measures. As part of the consultation process, Amtrak and NJ TRANSIT will perform additional work to determine whether any human remains or archaeological resources are actually present in those locations that would be disturbed by the project. If locations of burials cannot be avoided, a specific testing plan (building on previous investigations prepared for the ARC project) will be developed in consultation with NJHPO and with the appropriate cemetery descendant community(s) and consulting parties.

ARCHITECTURAL RESOURCES

As described in Chapter 5.2, "Historic Resources," construction of the build alternatives could potentially impact several historic resources in the study area. Resources that could be affected by the construction activities include the Portal Bridge, contributing elements of the Pennsylvania Railroad Historic District, and two other resources in the area of potential effect as described below.

The build alternatives would replace the rail bridge structure across the Belleville Turnpike in Kearny with multiple bridges to carry the new tracks over the roadway. These bridges would be constructed in the immediate vicinity of the Jersey City Waterworks Pipeline (S/NR-eligible). Construction of subsurface elements of the bridge structures could result in damage to the resource. In addition, while no physical changes are proposed to Amtrak's Substation 4 (S/NR-eligible) in any of the build alternatives, project-related construction would occur in close proximity to Substation 4, and therefore could result in accidental damage to the resource.

As set forth in the Memorandum of Agreement (MOA), ongoing consultation would be undertaken among FRA, NJHPO, Amtrak, and NJ TRANSIT as project engineering proceeds, to minimize or mitigate the adverse effects during construction to the Portal Bridge, the Pennsylvania Railroad Historic District, the Jersey City Waterworks Pipeline, and Substation 4. As part of this consultation, protection measures in the form of a Construction Protection Plan, would be developed in consultation with NJHPO, as set forth in the project's MOA. The Construction Protection Plan would set forth the specific measures to be used, and specifications that would be applied, to protect these architectural resources during the construction period. Additional information on construction period vibration effects on historic structures is included below under "Noise and Vibration."

VISUAL AND AESTHETIC CONSIDERATIONS

During construction, there would be an increase in the level of activity within the study area. As the project proceeds, cranes and other large pieces of equipment would be visible. However, construction of the build alternatives would not substantially alter important views. As described previously in Chapter 5.3, "Visual and Aesthetic Resources," the majority of the locations in the study area from which views are currently available are the roadways and rail corridors that transect the study area. The views to visual resources that motorists and rail passengers traveling on the transportation routes experience are generally of short duration, due to the relatively high speeds at which they tend to travel through the study area. Rail passengers traveling on the Northeast Corridor would be expected to have similar views on the proposed new bridges to those presently accessible from the Portal Bridge and Northeast Corridor. In addition, with the

exception of Laurel Hill Park and the Secaucus Transfer Station, pedestrian traffic within the study area is limited. Within a relatively short period of time, views of the new northern bridge would replace those of construction equipment and barges from these vantage points. In summary, during construction, the project would not substantially alter the visual character of the study area or to block important views to or from the study area.

AIR QUALITY

Air pollutant emissions from construction of the build alternatives would include fugitive dust emissions from land-clearing operations, demolition, grading and excavation, and mobile and stationary source emissions. Mobile source emissions from construction would occur as a result of operation of heavy-duty diesel and gasoline-powered construction equipment and operation of heavy-duty diesel trucks, locomotives and marine engines involved in transporting excavated material and delivering construction materials. Stationary source emissions would be related to diesel-powered generators for powering equipment, lighting, etc.

FUGITIVE EMISSIONS

Fugitive dust emissions from land clearing and grading operations can occur from excavation, hauling, dumping, spreading, grading, compaction, wind erosion, and traffic over unpaved areas. Actual quantities of emissions depend on the extent and nature of the clearing operations, the type of equipment employed, the physical characteristics of the underlying soil, the speed at which construction vehicles are operated, wind speed, direction and duration, and the type of fugitive dust control methods employed. The estimated emissions vary widely depending on many factors, including the intensity and type of land-clearing operations. Much of the fugitive dust generated by construction activities consists of relatively large-size particles, which are expected to settle within a short distance from the construction site. An important factor in limiting the amount of fugitive dust generated by construction of the Portal Bridge project is that much of the activities would occur in open water or wetland areas.

Common construction practices include extensive mitigation measures that would be implemented to suppress dust emissions. Appropriate fugitive dust control measures that could be employed include: watering of exposed areas, minimizing the time that bare soil is exposed, temporary vegetation planting on stockpiled soils, truck wash downs, and use of dust tarps on trucks.

MOBILE SOURCE EMISSIONS

Mobile source emissions are emissions of air pollutants from sources that are not stationary. During construction, such emissions may result from: (1) trucks delivering construction materials and removing debris; (2) workers' private vehicles; (3) diesel-powered locomotives for work trains and transport of materials; (4) marine engines for tugboats and other vessels that may be required; and (5) construction equipment operation. Mobile source emissions are categorized whether they are from on-road (vehicles on public roadways) sources or non-road (marine engines, construction equipment and locomotives) sources. The emission standard for each type of source varies with the on-road vehicles having the lowest emission levels.

Major construction activities associated with the build alternative would occur simultaneously at a number of locations throughout the project area. Ultra-low sulfur diesel fuel, mandated by USEPA's "Clean Air Non-Road Diesel Rule" would be used. In addition, Tier 4 engines or Tier 2 engines with after-market filters would be used to the extent practicable and technically

feasible for non-road diesel engines greater than 60 horsepower. After-market filters for Tier 2 engines with ultra-low sulfur diesel fuel would achieve nearly the same particulate emissions as the newer Tier 4 engines. Localized increases in mobile source emissions would be minimized through the use of barge and rail for materials transport where feasible, the use of established truck routes for truck deliveries, and restrictions on the idling of delivery trucks or construction equipment when not in active use.

STATIONARY SOURCE EMISSIONS

Depending upon the availability of power from the electrical grid, it is likely that diesel-powered generators would be used to provide a large portion of the power needs during construction of the project. Depending upon the number and size of any generators an operating permit from the NJDEP may be required. Typically generators with a heat input of less than 0.5 MW would not require a permit if they meet specific emission thresholds. It is possible that a temporary concrete batching plant could be established to reduce the number of concrete truck trips needed for construction. In this event, the necessary air permits and other operational approvals would be secured from the appropriate regulatory agencies.

POTENTIAL EFFECTS

For both mobile and stationary sources, the pollutants of concern include particulate matter (both $PM_{2.5}$ and PM_{10}) and nitrogen dioxide, due to the number of diesel-powered engines that may be involved in the construction process. Diesel particulate matter is a concern, particularly from non-road sources that have traditionally been subject to lower emission standards than on-road sources. However, the potential for adverse air quality impacts during construction of the build alternatives would be minimized for several reasons. First, the construction site is almost entirely surrounded by areas of limited access to the general public and is away from any sensitive air quality receptors (i.e., residences, schools, hospitals). Due to the availability of rail and water access, truck trips would be minimized and established truck routes would be utilized, further lowering the potential for diesel particulate emissions through commercial or residential areas. Finally, the project would utilize ultra-low sulfur diesel fuel for the non-road construction equipment that would be employed on-site during the duration of the construction process.

NOISE AND VIBRATION

Noise and vibration from construction equipment operation and noise from construction vehicles and delivery vehicles traveling to and from the project area may occur during construction of the proposed project. The level of impact of these noise sources depends on the noise characteristics of the construction equipment and activities, the schedule, and the location of potentially sensitive noise receptors. Noise and vibration levels at a given location are dependent on the kind and number of pieces of construction equipment being operated, as well as the distance from the construction site. Like most construction projects, construction of the build alternatives would result in increased noise and vibration levels for a limited time period.

NOISE

Typical noise levels of construction equipment that may be employed during the construction process are provided in Table 6-1. Noise from construction equipment is regulated by USEPA noise emission standards. These federal requirements mandate that: (1) certain classifications of construction equipment and motor vehicles meet specified noise emissions standards; and (2)

construction materials be handled and transported in such a manner as not to create unnecessary noise. These regulations would be carefully followed. In addition, appropriate low-noise emission level equipment would be used and operational procedures implemented. Compliance with noise control measures would be ensured by including them in the contract documents as material specifications and by directives to the construction contractor. The contractor would be encouraged to use quiet construction equipment.

Table 6-1
Construction Equipment Noise Emission Levels

Equipment	Typical Noise Level (dBA) 50 feet from source
Air compressor	81
Backhoe	80
Bulldozer	85
Compactor	82
Concrete Mixer	85
Concrete Pump	82
Concrete Vibrator	76
Crane, Derrick	88
Crane, Mobile	83
Generator	81
Grader	85
Impact Wrench	85
Jackhammer	88
Loader	85
Paver	89
Pile Driver (Impact)	101
Pile Driver (Sonic)	96
Pneumatic Tool	85
Pump	76
Rail Saw	90
Rock Drill	98
Roller	74
Saw	76
Scarifier	83
Scraper	89
Shovel	82
Spike Driver	77
Tie Cutter	84
Tie Handler	80
Tie Inserter	85
Truck	88
Sources: Transit Noise and Vibration Impact Assessment, FTA-VA-90-1003-06, May 2006.	

Noise generated by construction equipment would decrease with distance. In general, the outdoor drop-off rate for moving noise sources is a decrease of 4.5 dBA for every doubling of distance between the noise source and the receiver. For stationary sources, the outdoor drop-off rate is a decrease of 6 dBA for every doubling of distance between the noise source and the receiver. In general, noise caused by construction activities would vary widely in volume, duration and location, depending on the task being undertaken and the piece of equipment used. Noise caused by delivery trucks, employees traveling to and from the site, and other construction vehicles would not be severe in volume or duration, and would be limited to the major access

roadways leading to the project site. Highway access to the project site is good, minimizing the need for project-related trucks to travel on local roads. Furthermore, trucks to and from the project site, and their potential effect on noise, would be limited due to the availability of barge and rail access at the project site. Major elements of the project, such as the steel trusses for the river crossings, would be assembled off-site and delivered by barge. While some components would be delivered by truck, on a daily basis, the number of trucks would not be expected to result in substantial noise increases at any residential receptors. The project may result in temporary noise increases at Laurel Hill Park from material deliveries to a staging area on the east side of Hackensack River that may be needed for construction purposes. Any impacts would be temporary and would most likely occur due to weekday truck trips concentrated in the morning and afternoon peak periods, with occasional late night deliveries of oversized materials (e.g., bridge girders).

Construction activities related to the bridges, approach structures, embankment and retaining walls, and new track and ancillary equipment along each alignment would result in short-term noise increases in the vicinity of the actual work site. Like many corridor-type transportation projects, construction in any given area would be limited as the work progresses, minimizing the adverse noise impacts on any one site. Generally, due to the project site's relative isolation from sensitive uses, these noise increases would not be perceptible at noise-sensitive receptors. Much of the area adjacent to the construction site is neither occupied nor publicly accessible. Where adjacent uses are occupied they are not noise-sensitive uses. The only sensitive use that may be affected by construction related noise, however, would be the existing Hudson County Park at Laurel Hill.

Due to the distance and intervening New Jersey Turnpike and Snake Hill, the existing park would be shielded from much of the noise generated by on-site construction activities. Noise caused by impact-type equipment (e.g., drilling) may be discernible and might be considered intrusive at this location. However, due to subsurface conditions, it is assumed that the major structures, including the river spans, would be supported by foundations of drilled caissons rather than driven piles. This would reduce the potential noise impacts at the existing Laurel Hill Park. As discussed previously, Hudson County and the NY/NJ Baykeeper intends to expand the park in an area adjacent to the rail right-of-way. Currently there is no public access to the park expansion area. While access is planned, it is likely that it could be coordinated with construction of the Portal Bridge project, thereby avoiding noise impacts during the initial stages of project construction when the approach structures would be constructed in this area.

VIBRATION

Table 6-2 and 6-3 show architectural and structural damage risk and perceptibility distances for residential and historic structures in proximity to the types of construction activities that would occur during construction of the proposed project. Architectural damage includes cosmetic damage, such as cracked plaster, etc. Architectural damage is not considered potentially dangerous. As shown in Table 6-2, pile driving has the greatest potential to result in architectural damage to most building types. While not shown in the table, controlled blasting also can result in high vibration levels in excess of 100 VdB with resultant damage to existing structures. Most other construction activities require very small (i.e., less than 25 feet) distances between the structure and the construction equipment or the presence of highly fragile buildings for impacts to occur. For fragile and highly fragile buildings respectively, FTA recommends a limit of peak particle velocities of 0.2 and 0.12 inches per second or 94 and 90 VdB. Since the use of driven piles would be limited, and no controlled blasting is anticipated, the likelihood of vibration-

related adverse effects would be small. There are, however, two historic structures which would require special protection from construction-related vibration impacts. These resources (the Jersey City Waterworks Pipeline and Substation 4) would require special provisions as discussed below to ensure that no adverse effects occur from construction.

Table 6-2
Vibration Source Levels for Construction Equipment

Equipment	PPV at 25 ft (in/sec)	Approximate L_{v*} at 25 ft
Pile Driver (impact)	0.644	104
Pile Driver (sonic)	0.170	93
Clam Shovel drop (slurry wall)	0.202	94
Hydromill (slurry wall in soil)	0.008	66
Hydromill (slurry wall in rock)	0.017	75
Vibratory Roller	0.210	94
Hoe Ram	0.089	87
Large bulldozer	0.089	87
Caisson drilling	0.089	87
Loaded trucks	0.076	86
Jackhammer	0.035	79
Small bulldozer	0.003	58

Note: * RMS velocity in decibels (VdB) re 1 micro-inch/second
Source: *Transit Noise and Vibration Impact Assessment*, FTA-VA-90-1003-06, May 2006.

Table 6-3
Construction Vibration Damage Criteria

Building Category	PPV (in/sec)	Approximate L_{v*}
I. Reinforced-concrete, steel or timber (no plaster)	0.5	102
II. Engineered concrete and masonry (no plaster)	0.3	98
III. Non-engineered timber and masonry buildings	0.2	94
IV. Buildings extremely susceptible to vibration damage	0.12	90

Note: * RMS velocity in decibels (VdB) re 1 micro-inch/second
Source: *Transit Noise and Vibration Impact Assessment*, FTA-VA-90-1003-06, May 2006.

Special Provisions for Historic Structures

In addition to the establishment of a project-wide Construction Protection Plan (CPP), special measures set forth by NJHPO would be followed to protect historic resources from increased vibration levels associated with construction activities. At any construction locations where historic resources, and particularly older fragile buildings, are within an area of potential effect (see Chapter 5.2, "Historic Resources," for more details), construction contractors would be required to implement special vibration protection measures. These measures, to be included as part of the construction protection program for historic resources (discussed above under "Historic Resources"), would likely include the following:

- Inspect and report on the current foundation and structural condition of any historic resources.
- Set up a vibration monitoring program to measure vertical and lateral movement and vibration to the historic structures within 150 feet of construction activities. Details as to the frequency and duration of the vibration monitoring program would be determined as part of the project's ongoing consultation process with the NJHPO.

- Establish and monitor construction methods to limit vibrations to levels that would not cause structural damage to the historic structures, as determined by the condition survey.
- Issue "stop work" orders to the construction contractor, as required, to prevent damage to the structures, based on any vibration levels that exceed the design criteria in lateral or vertical direction. Work would not begin again until the steps proposed to stabilize and/or prevent further damage to the designated buildings were approved.

ECOLOGY

Impacts to ecology from construction would consist primarily of disturbances to river sediment, noise and vibration from construction equipment, as well as temporary loss of wetlands and other ecological habitats due to construction staging.

AQUATIC RESOURCES

In-water project elements necessary to support the build alternatives, such as bridge demolition and caissons drilling, have the potential to result in temporary adverse impacts to fish and macroinvertebrates due to the following:

- Increases in suspended sediment;
- Noise associated with pile driving; and
- Loss of benthic habitat within pile/pier footprints

The project site spans the Hackensack River, and would be strongly influenced by tidal currents. While measures such as silt curtains would be employed during in-water work, it is possible that some sediment may escape such controls. Any temporary sediment resuspension associated with pile driving or other construction activities would be localized to the project site. This sediment would be expected to dissipate shortly after the completion of the sediment disturbing activity and would not be expected to result in impacts to water quality or aquatic biota. Sediments throughout the Harbor Estuary contain contaminants and therefore work in the river would require special consideration and planning in advance of construction. While Hackensack River sediments have been found to contain contaminants at concentrations that may pose a risk to some benthic macroinvertebrates, the tidal currents within the project area should dissipate these sediments such that redeposition within or outside the project area would not be expected to adversely affect benthic macroinvertebrates or bottom fish. Furthermore, sediment resuspension will be mitigated through the use of silt curtains or other appropriate technologies during the period of disturbance.

Life stages of estuarine-dependent and anadromous fish species, bivalves and other macroinvertebrates generally are generally tolerant of elevated suspended sediment concentrations and have evolved behavioral and physiological mechanisms for dealing with variable concentrations of suspended sediment (Birtwell et al. 1987, Dunford 1975, Levy and Northcote 1982 and Gregory 1990 in Nightingale and Simenstad 2001, LaSalle et al. 1991). Fish are mobile and generally avoid unsuitable conditions such as increased suspended sediment and noise (Clarke and Wilber 2000). While a localized increase in suspended sediment may cause fish to temporarily avoid the area where bottom disturbing activities are occurring, the affected area would be expected to be small. Similar nearby suitable habitats would be available for use by fish to avoid the area being disturbed. Many estuarine fish species also have the ability to expel materials that may clog their gills when they return to cleaner, less sediment-laden waters. The shellfish species found in the Hackensack River are necessarily adapted to naturally turbid

estuarine conditions and can tolerate short-term exposures by closing valves or reducing pumping activity. Mobile benthic invertebrates that occur in estuaries have been found to be tolerant of extremely elevated suspended sediment concentrations. In studies of the tolerance of crustaceans exposed to suspended sediments for up to two weeks, nearly all mortality was caused by the full-time exposure to high suspended sediment concentrations (greater than 10,000 mg/L) (Clarke and Wilber 2000), which would not occur from the in-water work associated with the proposed project (except perhaps extremely locally). Therefore, temporary increases in suspended sediment resulting from in-water construction activities would not be expected to result in significant adverse impacts to fish and mobile benthic macroinvertebrates.

While it is expected that the project would not use driven piles for the bridge pier foundations, the effects of pile driving on fish were used as a worst-case analysis for any in-water construction activities. (As shown in Table 6-2, vibration levels for caisson drilling are much lower than for pile driving). Pile driving can produce underwater sound pressure waves that can affect fish, with the type and intensity of sounds varying with factors such as the type and size of the pile, firmness of the substrate, depth of water, and the type and size of the pile driver. Larger piles and firmer substrate require greater energy to drive the pile resulting in higher sound pressure levels (SPL). Hollow steel piles appear to produce higher SPLs than similarly sized wood or concrete piles (Hastings and Popper 2005). Sound attenuates more rapidly in shallow waters than in deep waters (Rogers and Cox 1988 in Hanson et al. 2003). SPLs generated by the driving of hollow steel piles with impact hammers can reach levels that can injure fish (Hanson et al. 2003), and may not generate sound in the frequencies that elicits avoidance behavior in fish. Impact hammers generate short pulses of sound with little of the sound energy occurring in the infrasound frequencies, the sound frequencies that have been shown to elicit an avoidance response in fish (Enger et al. 1993, Knudsen et al. 1994, and Sand et al. 2000 in Hanson et al. 2003). Therefore, fish have been observed exhibiting an initial startle response to the first few strikes of an impact hammer, after which fish may remain in an area with potentially harmful sound levels (Dolat 1997, NMFS 2001 in Hanson et al. 2003). While little data are available on the SPLs required to injure fish, fish with swim bladders and smaller fish have been shown to be more vulnerable (Hanson et al. 2003).

In-water construction is expected to last eight months for each bridge. Because the length of time for drilling each shaft is expected to be short and the tidal flux through the project area is high, individual fish would not be expected to be exposed to potentially dangerous SPLs long enough to result in mortality. Furthermore, underwater sound radiated by drilling would largely be confined and attenuated by the Hackensack River itself, significantly limiting potential impacts to regional fish populations. Lastly, in-water construction activities will not be conducted during the period identified as anadromous fish spawning period by regulatory authorities (typically April through June by the NJDEP and March through June by the National Oceanic and Atmospheric Administration [NOAA]). Therefore, the in-water work that would occur as a result of the proposed project would not be expected to result in significant adverse impacts to aquatic biota.

In summary, during construction of the in-water project elements for the build alternatives, temporary increases in suspended sediment, noise generated by caisson drilling, and alterations to bottom habitat and benthic macroinvertebrates would not be expected to result in adverse impacts to aquatic biota of the Hackensack River.

WETLANDS

For all alternatives, the bulk of the wetland impacts would occur east of the Hackensack River, in Town of Secaucus Block 1, Lot 3 (Laurel Hill Park Wetland) and Block 3, Lot 3 (Riverbend Wetlands Preserve). These large *Phragmites*-dominated wetlands with pockets of *Spartina alterniflora* and/or *Spartina patens* are typical of marshes adjacent to disturbed, developed areas, but nevertheless provide valuable habitat for a number of important plants and animals. In particular, Rutgers University uses portions of the Riverbend Wetlands Preserve as a reference site due to the presence of substantial amounts of native high marsh vegetation. Other wetland areas potentially impacted include comparatively smaller areas classified by NJDEP as herbaceous wetlands. Within the study area, these areas are typically non-tidal, freshwater wetlands in disturbed areas. Most of the wetlands in this category parallel the existing rail right-of-way and may have been created by artificially impounding areas during railway development.

Construction impacts to area wetlands would include the direct, permanent losses associated with fill and shaft/pier installation and any temporary, indirect impacts and potential wetland and wildlife disturbance due to noise, construction vehicle ingress/egress, temporary lay-down areas, and other transient uses.

The build alternatives would result in comparable temporary impacts to wetlands, from 6.5 to 7.7 acres, as shown in Table 6-4 below to construct the necessary work platforms and access roads in the open water and wetland areas. Platforms and/or access roads would be required within the Cedar Creek Marsh area, the open water west of Belleville Turnpike, Kearny Brackish Marsh, the Riverbend Wetland Preserve, and the new park area north of the existing right-of-way on the east side of the Hackensck River. Similar to the areas of permanent impacts, these wetlands are characterized by NJDEP as open water, deciduous scrub/shrub wetlands, *Phragmites*-dominated interior wetlands, *Phragmites*-dominated coastal wetlands, and herbaceous wetlands.

Table 6-4
Temporary Wetland Impacts (in acres)

Alternative	Section 1 (A)	Section 2	Section 3 (B)	Section 4 (C)	Section 5	Section 6 (D)	Section 7 (E)	Total
DS	2.07	0.02	0.71	0	1.39	2.03	1.45	7.67
DE	2.07	0.02	0.71	0	1.39	1.43	1.45	7.07
FE	1.45	0.02	0.71	0	1.39	1.43	1.45	6.45
FS	1.45	0.02	0.71	0	1.39	2.03	1.45	7.05

Notes:
(A) Wetlands in this section consist primarily of deciduous scrub/shrub wetlands, and open water.
(B) Wetlands in this area consist of *Phragmites*-dominated interior wetlands, and open water.
(C) Wetlands in this area consist of herbaceous wetlands and open water.
(D) Wetlands in this area consist of *Phragmites*-dominated coastal wetlands.
(E) Wetlands in this area consist of herbaceous wetlands.

Preferred Alternative DS would result in the largest temporary impacts to wetlands at 7.7 acres. This is because the southern alignment alternatives require a longer access road through the Riverbend Wetland Preserve to facilitate construction of the east approach to the southern bridge. Additionally, Alternatives DS and DE would involve greater temporary impacts to wetlands in the Cedar Creek Marsh (Section 1) than their fly-over counterparts, Alternatives FS and FE. However, they would result in less permanent impacts in this area. The wetlands in this section consist of deciduous scrub/shrub wetlands. Amtrak and NJ TRANSIT will continue to evaluate methods to avoid or minimize these wetlands impacts during the preliminary

engineering phase. As discussed in Chapter 5.6, it is anticipated that these construction-period wetland impacts will be considered permanent impacts for the purposes of mitigation. It is therefore expected that the potential mitigation measures presented in Chapter 5.6 will serve to mitigate both permanent and construction-period wetland impacts.

TERRESTRIAL

Construction activities in upland areas are generally confined to developed areas within or near the existing rail right-of-way. These areas are already largely developed, and include Laurel Hill Park and industrialized areas west of the Hackensack River. Construction impacts include permanent loss of terrestrial vegetation and habitat within the alternatives' right-of-ways, and any temporary, indirect impacts and potential terrestrial disturbance due to noise, construction vehicle ingress/egress, temporary lay-down areas, and other transient uses. In light of the largely developed nature of upland areas (including but not necessarily limited to railways, paved and unpaved access roads, and electrical transmission line routes, and industrial facilities), the impacts of the construction of build alternatives on terrestrial natural resources are expected to be minimal because the value of these upland areas as habitat for wildlife is low and most of the vegetation present in these areas comprises invasive, non-native species (e.g.,Tree-of-Heaven, *Phragmites*).

There is a potential for a number of threatened and endangered (T&E) species and other species of concern to occur within the project area during construction, including several bird species such as the peregrine falcon. Construction activities will comply with regulatory-restricted periods, and the project team will work in consultation with relevant resource management agencies to evaluate the presence/absence of key species and adjust construction methods and schedule to reduce impacts to species of concern based on their seasonal presence in the project area.

CONTAMINATED MATERIALS

Construction of the proposed project would involve demolition, relocation or other disturbance of existing structures and excavation, disturbance, and off-site disposal of some existing soil. All build alternatives would require substantial subsurface disturbance in specific areas such as the locations of bridge piers and abutments, retaining walls, and catenary support structures. Some elements, such as the drilled shafts, could require the disposal of soil up to 90 feet or more below the existing ground elevation. The presence of regulated materials only presents a threat to humans when exposure to these materials occurs. The most likely route of exposure would be through breathing volatile/semi-volatile compounds or particulate-laden air released during demolition, excavation, and construction activities. A health risk requires both a complete exposure pathway to the contaminants and a sufficient dose to produce adverse health effects. To prevent such exposure pathways and doses during construction, the proposed project would include appropriate health and safety and investigative/remedial measures. Most of the sites bordering the rail right-of-way are known to NJDEP and have had some degree of investigation. Once limits of disturbance for the chosen alternative are determined, NJDEP (along with other agencies including USEPA, NJMC, property owners, and potentially other responsible or affected parties, as appropriate) would be consulted.

Prior to commencing site disturbance, a Construction Health and Safety Plan (CHASP) would be prepared to address both the known contamination issues, based on existing information, and contingency items (e.g., finding unexpected chromate contamination or petroleum storage

tanks). The CHASP would describe in detail the health and safety procedures to minimize exposure of hazardous materials to workers and the public. The hazards would be evaluated by determining the known or suspected subsurface contaminants of concern and their chemical and physical characteristics, and health hazards would be considered within the potential exposure associated with the work to be performed. The CHASP would be developed in accordance with OSHA regulations and guidelines.

The project documents would address procedures for stockpiling, testing, loading, transporting (including truck routes), and properly disposing of all excavated material requiring off-site disposal. Excavated material would be characterized to classify the material (e.g., as hazardous waste, petroleum-contaminated wastes, chromate-contaminated soils, historic fill containing construction and demolition debris, or uncontaminated native soils). Wastes containing hazardous materials require special handling, storage, transportation, and disposal methods to prevent releases that could impact human health or the environment. Depending on the nature of the material, federal, state, and local regulations require the use of special containers or stockpiling practices for on-site storage of the material to prevent the release of hazardous materials to the environment. The federal, state, and local departments of transportation have requirements for transportation of wastes containing hazardous materials. Facilities that receive hazardous materials require federal, state, and local permits to accept the waste, and generally require that specific representative waste sampling and laboratory analysis protocols be conducted prior to accepting material for disposal. The extent and parameters of testing are dependent on the requirements of the waste disposal facilities, each of which may have different requirements for representative waste sampling and laboratory analysis prior to accepting material for disposal.

Dewatering of groundwater would most likely also be required in specific locations, depending on the final determination of the types of foundations to be used for bridges, viaducts, and retaining walls, as well as the ultimate construction methods. Where dewatering is required, it is possible that the water would require treatment prior to its discharge to surface water or existing sewers. Prior to any such discharge, the water would be tested. Discharge of water would be conducted in accordance with applicable requirements, including NPDES for discharge to surface water, and state and local requirements for sewer discharge.

UTILITIES

As described above, the project would include relocation of Amtrak's 138,000 volt (138 kV) power line that runs along the Northeast Corridor. The presence of other above ground and underground utilities including fiber optic cables, sanitary and stormwater sewers, and electric and gas lines will be determined during the preliminary engineering stage. Relocation of such utilities will be coordinated with the utility provider to minimize service disruptions. ✷

A. INTRODUCTION

The federal Council on Environmental Quality's (CEQ) regulations implementing the procedural provisions of the National Environmental Policy Act (NEPA), set forth in 40 C.F.R. Part 1500 et seq., requires federal agencies to also consider the potential for secondary and cumulative effects from a proposed project. Secondary (or indirect) effects are those that are "caused by an action and are later in time or farther removed in distance, but are still reasonably foreseeable" (40 C.F.R. 1508.8). Secondary and indirect effects can include the full range of impact types, such as changes in land use, economic vitality, neighborhood character, traffic congestion, air quality, noise, vibration, and water and natural resources. For example, transportation projects that provide new service to a neighborhood may result in indirect effects by inducing new growth in that neighborhood. Cumulative impacts result from the incremental consequences of an action when added to other past and reasonably foreseeable future actions (40 C.F.R. 1508.7). The direct effects of an individual action may be negligible, but may contribute to a measurable environmental impact when considered cumulatively with other past and/or future projects.

As discussed in Chapter 3, "Project Alternatives," four feasible build alternatives (Alternatives FE, FS, DE, and DS) have been identified and Alternative DS is the preferred alternative. The analyses presented in Chapters 5 and 6 of this EIS assess the potential direct effects of the project alternatives. Those analyses address a range of transportation, social, and environmental effects within a defined project area that include the project site and a larger project study area (the Northeast Corridor from Swift Interlocking to Secaucus Transfer Station). As explained in Chapter 3, all of the project alternatives have been evaluated assuming that several independent planned projects will be completed by the 2030 analysis year. The analyses presented in Chapters 5 and 6 therefore address, in part, the potential for cumulative effects. These analyses do not, however, fully address the potential for indirect and cumulative effects that could occur within a larger geographic region. Additionally, as discussed in Chapter 3, the Access to the Region's Core (ARC) project is not included in the Portal Bridge's No Action Alternative. The Portal Bridge project is required for implementation of the 2030 Operating Plan proposed for the ARC project (and subsequently, to its benefits and impacts). It is therefore appropriate to consider the Portal Bridge project's indirect effects as they pertain to the ARC project and to consider the cumulative effects of these projects together. The secondary and cumulative effects assessment in this chapter includes the ARC project in addition to other regional transportation and development projects. The assessment relies upon the *Access to the Region's Core Draft Environmental Impact Statement* (February 2007) and *Supplemental DEIS* (March 2008).[1] The Supplemental DEIS was prepared to assess the effects of changes in the design of the project's preferred alternative. With respect to the Portal Bridge project, the most relevant element of the revised design was the relocation of the two ARC tracks to the south of the existing Secaucus

[1] http://www.accesstotheregionscore.com

Transfer Station. These two tracks will need to connect to the two tracks leading to the new southern bridge, in the area west of Secaucus Transfer Station near the Boonton Line.

B. METHODOLOGY

SECONDARY AND INDIRECT EFFECTS METHODOLOGY

The CEQ regulations categorize indirect effects into two categories: (1) alteration of the behavior and functioning of the affected environment caused by project encroachment (physical, chemical, biological); (2) effects related to project-influenced development (e.g., changes in land use and/or demographic shifts). In response to the need for guidance on indirect effects, the National Cooperative Highway Research Program (NCHRP) initiated Project 25-10, the results of which were published as Report 403, "Guidance for Estimating the Indirect Effects of Proposed Transportation Projects," and Report 466, "Desk Reference for Estimating the Indirect Effects of Proposed Transportation Projects." These reports recommend an eight-step framework for estimating indirect effects.

- *Step 1–Scoping:* The basic approach, effort required, and geographical boundaries of the study area are determined in this step.
- *Step 2–Identify the Study Area's Direction and Goals:* Information regarding the study area is compiled with the goal of defining the context for assessment.
- *Step 3–Inventory the Study Area's Notable Features:* Additional data on environmental features are gathered and synthesized. The goal is to identify specific environmental issues by which to assess the project.
- *Step 4–Identify Impact-Causing Activities of Proposed Actions and Alternatives:* The component activities of each project alternative are fully described.
- *Step 5–Identify Potentially Significant Indirect Effects for Analysis:* Indirect effects associated with project activities and alternatives are catalogued, and potentially significant effects meriting further analysis are identified.
- *Step 6–Analyze Indirect Impacts:* Qualitative and quantitative techniques are employed to estimate the magnitude of the potentially significant effects identified in Step 5.
- *Step 7–Evaluate Analysis Results:* The uncertainty of the results of the indirect effects analysis is evaluated for its ramification on the overall assessment.
- *Step 8–Assess Consequences and Develop Mitigation:* The consequences of indirect effects are evaluated in the context of the full range of project effects. Strategies to avoid or lessen any effects found to be unacceptable are developed. Effects are reevaluated in the context of those mitigation strategies.

CUMULATIVE EFFECTS METHODOLOGY

CEQ's "Considering Cumulative Effects under the National Environmental Policy Act" (January 1997) offers a framework for examining cumulative effects of a proposed action. The guidance states that an EIS prepared in accordance with NEPA must consider the potential for a project, in combination with other projects and conditions, to have impacts that could not be identified in an examination of the project alone. The CEQ outlines an 11-step process for the identification and evaluation of cumulative effects. The first four steps address scoping, the next three steps focus

on describing the affected environment, and the last four steps discuss how to determine the environmental consequences.

- *Step 1:* Identify the significant cumulative effects associated with the proposed action and define the assessment goals.
- *Step 2:* Establish the geographic scope for the analysis.
- *Step 3:* Establish the timeframe for analysis.
- *Step 4:* Identify other actions affecting the resources, ecosystems, and human communities of concern.
- *Step 5:* Characterize the resources, ecosystems, and human communities identified in scoping in terms of their response to change and capacity to withstand stresses.
- *Step 6:* Characterize the stresses affecting these resources, ecosystems and human communities and their relation to regulatory thresholds.
- *Step 7:* Define a baseline condition for the resources, ecosystems, and human communities.
- *Step 8:* Identify the important cause-and-effect relationships between human activities and resources, ecosystems, and human communities.
- *Step 9:* Determine the magnitude and significance of cumulative effects.
- *Step 10:* Modify or add alternatives to avoid, minimize, or mitigate significant cumulative effects.
- *Step 11:* Monitor the cumulative effects of the selected alternative and adapt management.

C. SECONDARY AND INDIRECT EFFECTS

STEPS 1, 2, 3

Steps 1, 2, and 3 involved defining the scope and geographical boundaries for the analysis, gathering information about the study area, and preparing an inventory of the study area's notable features. This began with the preparation of the December 2006 *Scoping Document* for the Portal Bridge project, which identified the need for an indirect effects analysis due to the improved service and increased capacity provided directly by the ARC project, and indirectly by the Portal Bridge project. Because the ARC project would result in increased passenger rail service within the NJ TRANSIT system and increased capacity at New York Pennsylvania Station (PSNY), this assessment considers the potential for adverse effects within the greater New York metropolitan region, including those communities near affected NJ TRANSIT stations and the area near PSNY in Manhattan.

Information about the study area and its notable features were gathered throughout the analyses presented in Chapter 5. Chapter 5.1, "Land Use and Social Conditions," included a review of several important regional planning documents, including the Hudson County Master Plan (2002), the New Jersey Meadowlands Commission (NJMC) Master Plan, and *Meadowlands Mobility* and the *Hudson County Park Master Plan: Plan for Improvement 2007-2013*. Notable features near the Portal Bridge include the Hudson County Park at Laurel Hill Park (Laurel Hill Park), Hackensack River Walk (existing and planned portions), the East Coast Greenway, the Riverbend Wetland Preserve, and Cedar Creek Marsh. Important historic, archaeological, and visual resources were also inventoried.

STEP 4

Step 4 involved identifying which aspects of the proposed project would result in adverse impacts. This was addressed in Chapters 5 and 6, wherein each project alternative (including the No Action Alternative) was analyzed for its potential to result in direct impacts during construction and operation of the project. It was determined that improvements to operations between Swift Interlocking and Secaucus Transfer Station would result in a modest positive effect on transit ridership, vehicular traffic, marine traffic, air quality, and energy consumption. The build alternatives would have the potential to result in adverse effects on ecological resources, cultural resources, open space/parklands, and construction-related impacts.

STEPS 5 AND 6

INDIRECT TRANSPORTATION EFFECTS

Step 5 identifies those potential indirect effects that warranted further analysis and Step 6 measures these effects. An important goal of the Portal Bridge project is to improve reliability and provide additional rail capacity over the Hackensack River to allow enhanced Amtrak and NJ TRANSIT operations. This would lead to beneficial indirect effects including: sustained regional economic growth, more efficient transportation systems, and a reduction in automobile vehicle miles traveled (VMT), resulting in regional benefits to vehicular traffic and air quality. While the Portal Bridge project does not by itself result in additional train service to PSNY, it would allow future projects (such as ARC) to do so by expanding Hackensack River capacity. Therefore, the Portal Bridge project would indirectly lead to a greater reduction in regional auto VMT, as rail ridership increases in response to increased rail service from the 2030 Operating Plan and the ARC project. These indirect effects would be negligible in the absence of additional rail service across the Hudson River and into New York City. The benefits to transportation, air quality and energy are therefore discussed in the "Cumulative Effects" section, to account for the cumulative effects of the Portal Bridge and ARC projects.

The Portal Bridge project would, as an independent project, improve service and reliability. This enhanced rail service would indirectly result in some adverse transportation effects by improving service that could induce greater ridership and therefore additional demand on local transportation services in the vicinity of PSNY. These effects would include increased vehicular and pedestrian traffic on the streets surrounding PSNY as well as an increase in transfers to New York City Transit (NYCT) subway lines serving the station. Since the adverse effect is more pronounced in conjunction with the additional service proposed with the 2030 Operating Plan and the ARC project, it is discussed below under Cumulative Effects.

INDIRECT ECOLOGICAL AND ENCROACHMENT EFFECTS

Other indirect effects that may result from the Portal Bridge project pertain to the filling of wetlands, encroachment upon ecological resources, and disturbance of contaminated sediment. Three possible mechanisms could result in adverse indirect effects. The first is the direct loss of wetland and upland habitat and the resulting displacement of the existing wildlife and avian populations in that habitat. This displacement could impact the existing wildlife populations in areas further removed from the project site. Temporary disturbances during construction could also result in the displacement of wildlife and avian species from neighboring habitats. The second mechanism would be related to the short-term effects to water quality from disturbances to sediments and stormwater runoff during construction. Potential indirect impacts could occur if contaminated sediments or other pollutants are transported to locations further removed from the

zone of direct impact. The third mechanism involves the potential long-term effects on adjacent wetlands from alterations of the project site. These alterations could result in changes to the existing hydrology or vegetative characteristics, thereby negatively affecting the value and quality of the remaining wetlands over the long-term.

INDUCED GROWTH-RELATED EFFECTS

The build alternatives would result in beneficial secondary effects including sustained regional economic growth, an increase in regional mobility, and a reduction in automobile use. Since the project would relieve a critical bottleneck on a well-established rail corridor, rather than develop a new rail corridor, the potential for induced growth-related effects is small. Most of the area served by the existing rail network is already highly developed. Future development is planned within some parts of the indirect effects study area; however, the project would be supportive of that development but would not cause it. Therefore, the project would further the goals of sustaining economic and population growth.

STEPS 7 AND 8

For all of the adverse indirect effects identified above, the indirect impacts stem from the direct impacts. If the direct impacts are avoided or mitigated, the indirect impacts could be substantially avoided. As discussed in Chapter 5.6, "Ecology," and Chapter 6, "Construction Impacts," mitigation measures have been proposed. These measures would substantially minimize the potential direct impacts on these resources and therefore any subsequent indirect impacts. With respect to the loss of habitat and the potential displacement of wildlife and avian species, the amount of loss would be small in comparison to the extensive habitat adjacent to and in the surrounding areas. In addition, the project proposes to replace and/or restore wetlands within the Meadowlands District, further minimizing any adverse indirect impacts.

D. CUMULATIVE EFFECTS

As required under NEPA, this EIS analyzes the resources, ecosystems, and communities of concern identified in the Scoping Document. Baseline conditions and the environmental consequences of the proposed project on each resource are described and assessed in the preceding chapters of this document according to the CEQ guidance. This chapter looks specifically at the potential for the project to result in cumulative effects on these resources.

STEP 1: ASSESSMENT GOALS

The cumulative effects assessment does not consider resources, ecosystems, and human communities of concern substantially different from those identified in the direct effect assessment; however, the assessment of cumulative effects differs in that the effects are recast for their long-term and interactive significance. If the proposed project does not result in direct or indirect effects to a given resource, then no further assessment of potential cumulative effects is necessary. As part of Step 1 of this analysis, a summary (see Table 7-1) of the direct and indirect effects for each resource category was developed. Based on this summary, the potential for the project to result in substantial cumulative effects and the need for additional analysis were assessed. The resource categories of concern include:

- Transportation: Vehicular traffic; commuter and inter-city rail; bus and rail transit; and pedestrians.
- Social: Land use and social conditions; open space, parklands and recreation; economic conditions; historic and archaeological resources; and environmental justice.

- Environmental: Ecology (wetlands and wildlife); water resources (floodplains and water quality); air quality; noise; contaminated materials; and construction impacts.

STEP 2: GEOGRAPHIC SCOPE AND STEP 3: ANALYSIS TIME FRAMES

Several factors were considered in determining the geographic scope (Step 2) and analysis timeframes (Step 3). First, the selection of the study area for each cumulative effect depends on the character of the resource that may be affected. For the operational and transportation-related issues (traffic, transit, air quality, etc.), two study areas were identified. One study area addressed regional project benefits and therefore included the New York-New Jersey metropolitan area. The second study area focused on localized indirect and cumulative impacts and was therefore centered on PSNY. For resource-related issues (such as ecology and cultural resources), the cumulative effects were assessed using a study area that encompassed nearby projects. For ecological resources and land use and social conditions, the Meadowlands District was defined as the study area. For the assessment of cumulative cultural resource effects, the Pennsylvania Railroad Historic District was included in the study area. The analysis considers the direct effects of project construction up to and including completion of the ARC project (approximately 2017). For cumulative effects associated with project operations, the analysis includes the train service and related transportation effects to the year 2030.

Table 7-1
Potential Direct, Indirect, and Cumulative Effects

Resource	Direct Effect	Indirect Effects	Project's Possible Contribution to Cumulative Effects
Transportation			
Vehicular Traffic	None	Small, negligible reduction in VMT in the region; slight increase in traffic in the vicinity of stations, particularly PSNY	Potential local adverse effect in conjunction with ARC. Regional benefit in conjunction with ARC and the 2030 Operating Plan
Passenger Rail	Potential impact on service and operations during construction	Similar to vehicular traffic	Potential beneficial cumulative effect with ARC due to increased service
Bus and Subway	None	Small, negligible, effect at PSNY	Potential adverse cumulative effect with ARC at PSNY from additional demand for services
Pedestrians	None	Same as subway and bus in the vicinity of PSNY	Similar to bus and subway at PSNY/PSNYE
Social			
Land Use and Social Conditions	None	None	None
Open Space, Parklands and Recreation	Direct effect on the expansion of Laurel Hill Park and the Riverbend Wetland Preserve	None	Cumulative noise effect examined with 2030 Operating Plan; potential for cumulative direct effect with other projects planned in Meadowlands
Economic Conditions	Relocation of two businesses	Positive benefit from supporting regional mobility	Cumulative positive regional benefit with 2030 Operating Plan

Table 7-1 (cont'd)
Potential Direct, Indirect, and Cumulative Effects

Resource	Direct Effect	Indirect Effects	Project's Possible Contribution to Cumulative Effects
Historic and Archeological Resources	Adverse effect on the existing Portal Bridge, Pennsylvania RR Historic District and possibly the Historic Cemeteries of Hudson County, Substation 4, and Jersey City Waterworks Pipeline	None	Cumulative effect on the Penn RR Historic District and Historic Cemeteries of Hudson County in conjunction with past actions and the ARC project that have or will alter the context and integrity of these resources
Environmental Justice	None	None	None
Environmental			
Water Resources	Construction related short-term effects only	Possible off-site transport of pollutants during construction	Possible cumulative effects with construction of other nearby projects
Ecology	Permanent loss of wetlands, open water, and benthic habitat	Possible displacement of wildlife and fragmentation of wetlands	Permanent loss of ecological resources
Air Quality	No direct effects	Slight regional benefit due to reduction in vehicular emissions; more pronounced under cumulative effects	Regional benefit/local impacts in conjunction with ARC and proposed increase in service
Energy	None	Increased energy demand from higher grade offset by improvements in service and slight reduction in auto-related travel	Cumulative benefit in conjunction with ARC by reducing auto-related travel
Noise and Vibration	Adverse noise impact on adjacent parkland (similar to No Action Alternative)	None	Adverse local effect from cumulative increase in train operations (i.e., 2030 Operating Plan)
Contaminated Materials	Short-term construction related disturbance to sites known to contain contaminated and/or hazardous materials, long-term benefit from remediation.	None	Additional disturbance in the project area from ARC-related construction
Construction Impacts	Direct effects on ecological and cultural resources; impacts to navigable waters; rail service disruption	Indirect ecological impacts (such as wetland fragmentation)	Potential effect with construction of ARC loop tracks in Meadowlands; rail service disruption

As stated in the CEQ guidance, the cumulative effects analysis needs to consider "the present effects of past actions to the extent that they are relevant and useful in analyzing whether the reasonable foreseeable effect of the project may have a continuing, additive, and significant relationship to those effects." However, the guidance does not require "the consideration of the individual effects of all past actions to determine the present effects of past actions." Where appropriate, the present effect of past actions was determined through a comprehensive documentation of baseline conditions throughout the study area. The most relevant past actions include: the creation of the Hackensack Meadowlands District in 1968; the construction of the Kearny Connection in 1996; the completion of the Secaucus Transfer Station in 2003; construction of New Jersey Turnpike Interchange 15X in 2005; and publication of the updated *NJMC Master Plan* in 2004.

STEP 4: OTHER ACTIONS AND CONDITIONS AFFECTING CUMULATIVE EFFECTS

An important part of assessing cumulative effects is compiling a comprehensive list of relevant actions and long-term trends in or near the study area that may interact with the project's effects to produce broader or more long-term effects on the environment. These types of actions or trends include ecological preservation proposals, development planning, transportation improvements, and anticipated growth trends in general. Chapter 3, "Project Alternatives," describes several transportation projects that are planned to be fully constructed and operational by 2030 and have therefore been included in the No Action Alternative for this EIS. These projects include the Farley Post Office/Moynihan Station Development Project, various improvements to New York Pennsylvania Station, and the Wittpenn Bridge Replacement Project. Additionally, a number of development projects and open space plans proposed in or near the study area were discussed in detail in Chapter 4, "Transportation Effects," and Chapter 5.1, "Land Use and Social Conditions" and are also part of the No Action Alternative. Since these projects are part of the future baseline conditions, their cumulative effect in conjunction with the Portal Bridge project has already been considered in the individual impact analyses presented in Chapters 4 and 5. This cumulative impacts assessment is intended to evaluate the combined effects of all reasonably foreseeable projects. It therefore includes projects not included in the No Action Alternative, such as the ARC project and the potential Kearny Yard lead tracks.

The ARC project will include the construction of New York Pennsylvania Station Expansion (NYPSE) beneath 34th Street in Midtown Manhattan; two new railroad tunnels beneath the Hudson River; dedicated rail infrastructure south of the existing Secaucus Transfer Station feeding into NYPSE; track connections between the Main/Bergen County and Pascack Valley Lines, and a new rail yard in Kearny, New Jersey on the banks of the Hackensack River. NJ TRANSIT may eventually construct a lead track that would connect the planned Kearny Yard to the western approach to the new southern bridge (proposed as part of the Portal Bridge project). Although this lead track is neither part of the Portal Bridge project nor the ARC project, it is a reasonably foreseeable action and has been considered in this cumulative effects analysis, particularly with respect to its potential effects on ecological resources and contaminated materials.

The ARC project will expand existing rail capacity east of the Hackensack River into New York City. In addition to the planning efforts for the ARC project, Amtrak and NJ TRANSIT have formulated a 2030 Operating Plan, which is based in part on the projected growth in population and employment along the Northeast Corridor and in New York and New Jersey. The 2030 Operating Plan would expand peak hour rail service from 23 to 48 trains per hour into New York City (including 23 operating to the existing PSNY and 25 operating to the proposed NYPSE). It is assumed that absent the expansion of capacity across the Hackensack River, Amtrak and NJ TRANSIT will not be able to achieve the full proposed 2030 Operating Plan.

STEPS 5, 6, AND 7: CHARACTERIZATION OF THE RESOURCES, STRESSES, AND BASELINE CONDITIONS

As identified in Table 7-1, the resources of concern and their respective stresses include:

- Long-term operational effects related to the increase in rail service in conjunction with the ARC project and its adverse and beneficial effects on transportation service, air quality, energy consumption, and ambient noise levels;

- The cumulative effect from construction of the proposed project in conjunction with other projects in the Meadowlands District on open space, wetlands and natural resources, and contaminated materials; and
- The cumulative effect of past, current, and future actions on the Pennsylvania Railroad Historic District.

The characterization of each of these resources and their baseline conditions were described previously within their respective subchapters of Chapter 4, "Transportation Effects," and Chapter 5, "Social, Economic, and Environmental Considerations." Steps 8 and 9 below consider these resources and re-examine the potential cumulative effects of the project in conjunction with other actions that could result in foreseeable adverse or beneficial effects.

STEPS 8 AND 9: IDENTIFY CAUSE-AND-EFFECT RELATIONSHIPS AND DETERMINE CUMULATIVE EFFECTS

TRANSPORTATION EFFECTS

Passenger Rail

The Portal Bridge project build alternatives would improve rail service reliability and provide additional rail capacity over the Hackensack River. The project would enable enhanced Amtrak and NJ TRANSIT operations and, in conjunction with the ARC project, allow the implementation of the proposed 2030 Operating Plan. Of the additional 25 peak hour trains reaching Manhattan, 16 would traverse the new Hackensack River crossing(s). Therefore, 39 out of the 48 total planned peak hour trains would cross the new Portal Bridge(s) and contribute to cumulative regional benefits to transportation. The resulting improvements in reliability and reduction in travel time would lead to an improvement in regional mobility and economic growth. As a result of the enhancements in rail service frequency, speed and reliability, rail ridership would increase. The NJ TRANSIT's demand forecasting model and the North Jersey Travel Demand Forecasting model predict that rail ridership into midtown Manhattan would more than double from the existing condition, bringing a substantial number of new rail passengers to midtown Manhattan. As discussed below, this increase in ridership may also affect traffic and parking conditions at transit stations in central and northern New Jersey.

Traffic

By improving rail access over the Hackensack River and enabling NJ TRANSIT and Amtrak to fully implement the 2030 Operating Plan for each railroad, the build alternatives would reduce the daily demand for trans-Hudson auto trips by more than five percent (over 20,000 vehicles).

Analysis of Cumulative Regional Effects

The additional train service would lead to an increase in the number of passengers using NJ TRANSIT and Amtrak service, thereby decreasing the number of vehicle trips into New York City from the west. This would result in a reduction of VMT in the region (both in New York and New Jersey) and translate into a beneficial effect on the region's roadways, including wear and tear. It would also lead to a reduction in the level of congestion and travel times throughout the region, particularly during the commuter peak periods. Furthermore, the reduction in VMT on the region's expressways and river crossings would contribute to enhanced mobility throughout the metropolitan area, thereby supporting the existing and continuing trend of economic growth in the region.

Analysis of Cumulative Local Effects

While these projects would together reduce vehicle trips on a regional level and improve regional travel by making rail transportation more convenient and reliable, they would contribute to a projected increase in vehicular traffic in the immediate vicinity of PSNY and, to a lesser degree, at stations throughout the NJ TRANSIT system. The cumulative effects analysis considered this additional traffic in conjunction with other reasonably foreseeable projects in the study area and their combined effect on the local roadway network. The cumulative increase in rail passenger trips would result in adverse traffic effects near PSNY, due primarily to additional demand for taxis. As stated in the ARC SDEIS, taxi vehicle trips would increase by more than 200 in the AM and PM peak hours. An analysis of future traffic conditions around PSNY indicated that several intersections during the AM and PM peak hours would be adversely affected by the 2030 Operating Plan. The Portal Bridge project alone would not result in measurable effects of this level. Therefore measures to mitigate these potential traffic impacts have been proposed as part of the ARC project and would be the responsibility of that project's sponsors. The cumulative increase in rail passengers would also require the addition of three New York City Transit (NYCT) buses on the M16/M34 line during peak traffic hours, as described in the ARC SDEIS. While the additional riders at PSNY would increase demand on the NYCT subway system, none of the lines serving the station would reach or exceed capacity with the increased patronage.

The additional train service would also lead to increases in passenger demand at stations throughout northern and central New Jersey. This would lead to localized increases in traffic and parking demand as ridership at individual stations increased over time. As described in the ARC DEIS and SDEIS, the specific locations of increased station access activity would change as the operating plan is implemented and adjusted to respond to changes in land use and development patterns, demographics or customer preferences. Furthermore, the ARC DEIS and SDEIS discusses how these potential adverse effects on parking and traffic would be assessed as part of NJ TRANSIT's ongoing Station Access Program. The program consists of various proactive measures which are intended to manage potential adverse indirect impacts on local transportation systems resulting from changes in service and increased ridership. Potential measures include: additional station parking; parking expansion at intercept locations; development of new stations to distribute ridership; community-based shuttle bus service; bicycle and pedestrian access improvements; and implementation of Smart Growth/Transit-Oriented Development in various communities.

Pedestrians

On a local basis, by contributing to the overall improvement in rail passenger movement into New York City, the build alternatives together with the ARC project could affect pedestrian conditions in the area surrounding PSNY. The number of pedestrians on sidewalks and subway stations in the West 34th Street area would substantially increase, adversely affecting the level of service on a number of sidewalk segments, street corners, crosswalks, and stairwells during the peak periods. The added pedestrian volumes would affect several sidewalk segments and street corners during the AM and PM peak periods. Several crosswalks would also be affected. A large number of PSNY stairwells would also experience adverse effects during both AM and PM peak periods. Similar to the traffic impacts discussed above, the effect of the Portal Bridge project would only be measurable in conjunction with the ARC project and the 2030 Operating Plan. Mitigation measures that would alleviate these adverse effects were proposed in the ARC DEIS and SDEIS.

While improvements in rail capacity over the Hackensack River would also lead to indirect and cumulative effects at stations throughout New Jersey (and possibly at Amtrak stations as far away as Washington, D.C.) the effect would be much less pronounced than any potential effects at PSNY. It is expected that the effects would be diffused over a very large area such that no one station (with the exception of PSNY) would experience noticeable cumulative adverse effects. Furthermore, it would be expected that any individual indirect effect of the Portal Bridge project would be a minor contribution to the cumulative effects discussed above.

SOCIAL EFFECTS

Open Space, Parklands and Recreation

The build alternatives for the Portal Bridge project would result in an adverse direct effect on open space and parklands in the study area. All alternatives would require acquisition of a portion of the land recently acquired by Hudson County and the NY/NJ Baykeeper for the expansion of Laurel Hill Park. In addition, Alternatives DS and FS would require acquisition of a portion of the Riverbend Wetland Preserve. While the ARC project would contribute to an increase in noise levels at the Riverbend Wetland Preserve and Laurel Hill Park from increased train passbys, it would not result in direct encroachment on these or other parklands in the area. As described below under "Ecological Resources," the NJMC is responsible for the preservation of open space and wetlands in the district. Therefore, the project sponsors would work with the NJMC, Hudson County, and the NY/NJ Baykeeper to avoid any adverse cumulative effects by providing mitigation to offset the project's contribution to the loss of open space and parkland. This effort would be in conjunction with the wetland mitigation measures proposed for the temporary and permanent loss of these resources.

Historic Resources

As described in Chapter 5.2, "Historic Resources," the build alternatives would result in direct adverse effects on several resources in the study area. Architectural resources affected include the existing Portal Bridge and the Pennsylvania Railroad Historic District. A Construction Protection Plan (CPP) would be developed to avoid or minimize any potential construction-period effects on Substation 4 and the Jersey City Waterworks Pipeline. In addition, the build alternatives could potentially adversely affect one archaeological resource, the Historic Cemeteries of Hudson County. As noted in Chapter 5.2, while the Historic District retains historic integrity overall, it has undergone extensive alterations since the time of its S/NR eligibility determination. In light of the extensive recent alterations to the fabric and appearance of the Pennsylvania Railroad Historic District in the study area, the proposed project (together with these past projects and the planned ARC project) would constitute an adverse effect. Mitigation measures would be developed and implemented as per the provisions of the Memorandum of Agreement (MOA) included in Appendix B. Mitigation for adverse effects on the Portal Bridge and Pennsylvania Railroad Historic District would include Historic American Engineering Record (HAER) documentation for Portal Bridge and the portions of the Pennsylvania Railroad Historic District within the APE; ongoing consultation with NJHPO regarding the design of the new bridge; salvage of elements of the affected historic resources; development of an interpretive exhibit in a park, greenway, or public space, that would present the history of the Pennsylvania Railroad and Portal Bridge, that could include but would not be limited to salvaged elements of these resources and signage; and additional documentation interpreting the history and significance of the Portal Bridge and Pennsylvania Railroad Historic District in the form of a website.

Both the Portal Bridge and ARC projects may have an adverse effect on the Historic Cemeteries of Hudson County. The adverse effect would only occur if the project work would encroach upon the actual limits of the cemetery and if the area in question had not been affected by previous construction activities. The MOA addresses these concerns for the Portal Bridge project and provides measures to minimize the potential harm to the resource.

Economic Conditions

All build alternatives would require the acquisition of property and relocation of two existing businesses. While the ARC project does include acquisition of several properties and businesses (e.g., a warehouse, a fast food restaurant, and a self-storage facility), none of these are within the Portal Bridge project's study area. In terms of the larger geographic area, the several businesses that would be acquired or relocated by either project would not result in any adverse effects to the overall economy of northern New Jersey. The Portal Bridge build alternatives would not result in any other adverse economic impacts. On a regional level, the proposed project would greatly benefit the economy of New York and New Jersey by providing additional capacity that would enable NJ TRANSIT and Amtrak to increase in rail service to midtown Manhattan.

ENVIRONMENTAL EFFECTS

Ecological Resources

Functioning wetlands provide habitat for plants and animals and breeding grounds for fish, purify water, and help control flooding and soil erosion. The build alternatives, in conjunction with the ARC project and other planned projects, would occur within the Meadowlands District. The Meadowlands District encompass 19,730 acres in Bergen and Hudson Counties and is one of the largest wetland complexes remaining in the Hudson Raritan Estuary ecosystem, as well as one of the largest contiguous blocks of open space in the highly developed landscape of the New York City metropolitan area. The Meadowlands once covered about 20,000 acres of estuarine marsh, freshwater marsh, and Atlantic white cedar swamp. Following many decades of suburban development, dredging, draining, mosquito control, landfilling, and industrial pollution, some 7,700 acres of wetlands (many of which are privately owned) remain in Meadowlands District.

The action that has had the greatest positive effect on the Meadowlands District was the creation of the Hackensack Meadowlands Development Commission (now NJMC). Since its inception in 1969, NJMC has acquired over 1,700 acres of wetlands for preservation and restoration. The NJMC *Master Plan*, adopted at the beginning of 2004, calls for the preservation of 8,400 acres of open space and wetlands, as well as the revitalization of blighted areas into places for economic and community growth. The Commission acquires degraded wetlands for enhancement on behalf of organizations whose development projects in the Meadowlands District result in the loss of wetlands. Permits for these projects normally require compensation for these losses. The Meadowlands Interagency Mitigation Advisory Committee (MIMAC), a team of experts from various state and federal agencies, meets regularly to make recommendations regarding mitigation proposals for permitted activities within the Meadowlands District. To date, most organizations that have provided land and funds are transportation agencies, although private groups also fund Commission projects. The projects typically consist of controlling the growth of invasive species, reestablishing tidal flows and creating areas for plantings of native vegetation. Wetland restoration projects that were recently completed or are currently planned include Skeetkill Creek Marsh (16.3 acres), Harrier Meadow, Mill Creek Marsh, Berry's Creek Marsh (135 acres), Eastern Brackish Marsh (75 acres), Oritani Marsh (224 acres), Riverbend Wetland Preserve (58 acres), Secaucus High School Marsh (38

acres), Anderson Creek Marsh (53.2 acres), Kearny Freshwater Marsh (236 acres), Kearny Brackish Marsh (155 acres), and Riverside Marsh (31 acres).

The proposed build alternatives would require the permanent filling of up to 6.5 acres of wetlands, open water, wetland preserve, and planned wetland restoration areas within the Meadowlands District. As discussed previously, these adverse effects would be mitigated at a ratio determined in conjunction with MIMAC and other involved agencies. The ARC project would impact up to 27 acres of wetlands. The project sponsors for the ARC and Portal Bridge projects are coordinating with the Meadowlands Conservation Trust and other appropriate agencies to develop an appropriate mitigation plan. A preferred option is to purchase credits from an established wetland mitigation bank. Currently, there are no approved banks within the Meadowlands District. However, credits may become available from the Richard P. Kane Tract (referred to as the "Kane Tract" and previously known as the "Empire Tract"). As discussed in Chapter 5.6, "Ecology," the Kane Tract is being developed by the Meadowlands Conservation Trust as a wetland mitigation bank specifically for transportation projects in the Meadowlands District. The Kane Tract is being established in accordance with the Request for Qualifications (RFQ) issued by the Meadowlands Conservation Trust on April 7, 2008. As per the RFQ, 254 acres of the Kane Tract (out of the total 584 acres) will be made available for compensatory mitigation exclusively for NJ TRANSIT, the New Jersey Turnpike Authority, the New Jersey Department of Transportation (NJDOT), and the Port Authority of New York and New Jersey (PANYNJ). PANYNJ has submitted permit applications for the Teterboro Airport EMAS project, a runway safety improvement project, for which credits from the bank will be sought. It is expected that 8.7 acres of wetlands impacts will result from this project.

In addition to these projects, several other projects are under constructed, planned, or recently completed within the Meadowlands District, including:

- The Meadowlands Railroad and Roadway Improvement Project is multi-agency project that will provide transportation options (rail and highway) to the New Jersey Meadowlands Sports and Entertainment Complex. The project will include new rail tracks that will link to NJ TRANSIT's Pascack Valley Line as well as a new rail station. The project is currently under construction and is expected to be completed in 2009. It will affect 1.7 acres of wetlands. Permanent impacts will include shading from a viaduct over approximately 1.03 acres and filling approximately 0.56 acres of wetlands to accommodate the railroad alignment at grade. The project would also include 1.11 acres of temporary impacts from the construction of service roads during the build phase.

- The Meadowlands Xanadu project is a 4.8 million-square-foot shopping, sports, and recreation complex currently under construction in East Rutherford. Xanadu will include a 2.5 million square foot retail space, divided into Sports, Entertainment, Fashion, Youth, and Food and Home districts, four 440,000 square foot office towers, a twelve-story full service hotel, and a 280-foot ferris wheel. The project will impact 7.69 acres of wetlands.

- Other potential projects nearby include Allied Junction, a proposed 28 acre mixed-use development to be constructed over the existing Secaucus Transfer Station, and EnCap Golf Holdings, a 2,600 unit golf community proposed over four landfills in Lyndhurst and Rutherford. As of the date of this EIS, the future of these two potential projects is unknown.

- The Frank R. Lautenberg Station, also known as Secaucus Transfer Station, was completed by NJ TRANSIT in December 2003. Mitigation for approximately 15 acres of wetlands and

shading impacts was implemented in coordination with the Hackensack Meadowlands Development Commission (now NJMC).

Each of these projects required or will require wetland permits and mitigation plans. Part of NJMC's mission is to prevent adverse cumulative effects and they have established mechanisms to control and coordinate ecological resource impacts and mitigation. For each project in the Meadowlands District that negatively affects wetlands, compensation is required.

Noise

The direct effects of the Portal Bridge project stemming from an increase in the maximum allowable train speed and changes in bridge alignment were discussed in Chapter 5.5, "Noise and Vibration." As discussed, the noise levels within 419 feet from the proposed project would increase, but since there are no existing receptors sensitive to noise within that distance, this effect is not considered to be adverse. In addition, the build alternatives have the potential to increase noise levels in a portion of the planned expansion of Laurel Hill Park. This increase would, however, be similar to the effects of the No Action Alternative, due to the proximity of Laurel Hill Park to the heavily used rail corridor.

Under the 2030 Operating Plan and the ARC project, additional NJ TRANSIT and Amtrak service is proposed. To assess the cumulative effect of the Portal Bridge and ARC projects on existing noise levels, the enhancement in rail service and frequency over the proposed Portal Bridge was analyzed assuming the full 2030 Operating Plan would be implemented. The cumulative effect on existing noise levels would cover a greater area than the direct effect of the proposed project alone. The noise impact area would extend about 473 feet from the proposed project boundary (the impact would be categorized as "severe" within 256 feet of the proposed project boundary). There are currently no sensitive noise receptors within the area that would be affected by these noise impacts. A portion of the planned expansion of Laurel Hill Park would experience greater noise levels in conjunction with the ARC project than from the proposed project alone. The cumulative effect would extend about 54 feet further than the direct effect of the Portal Bridge project alone. This cumulative noise impact would affect a small area within the Laurel Hill Park expansion parcel. The increase would be less than 3 dBA, which would not be perceptible and would not be expected to result in any adverse ecological impacts.

Air Quality and Energy

The VMT reduction in the New York-New Jersey metropolitan area that would result from the build alternatives in conjunction with the ARC project would correspond to a cumulative regional air quality benefit. Energy savings resulting from a shift from auto-based travel to commuter rail would also accrue on a regional basis. On a local level however, the build alternatives (in conjunction with the ARC project) would contribute to the increased passenger levels and taxi demand at PSNY. This would have a measurable but less than significant effect on ambient pollutant concentrations in the vicinity of the station. The cumulative regional and local effects on air quality are discussed below.

Regional (Mesoscale) Analysis

The analyses performed for the ARC project assumed the Portal Bridge project would be completed. Therefore, the air quality effect analyses presented in the ARC DEIS and SDEIS appropriately addressed the cumulative effects of the ARC and Portal Bridge projects on air quality. The analysis of the full 2030 Operating Plan in these documents were based on the Environmental Benefits Template (EBT) of the Federal Transit Administration (FTA) New

Starts Criteria (2006 version), which applies VMT and vehicle hours of travel (VHT) within the region with and without a project. The analysis in the ARC SDEIS of the 2030 Operating Plan indicates that CO, NO_x, VOC, PM_{10}, and $PM_{2.5}$ emissions would decrease, primarily as a result of a reduction in passenger vehicle VMT. Energy consumption and associated greenhouse gas emissions (i.e., CO_2) would also decrease.

Localized (Microscale) Analysis

The cumulative increase in transit ridership into Midtown Manhattan would increase passenger activity and, therefore, traffic volumes in the vicinity of PSNY (and critical intersections along West 34th Street) since some riders will use taxis to their final destination. Bus ridership may also increase in the vicinity of PSNY, leading to possible increases in diesel emissions. Based on the analysis in the ARC SDEIS, the greatest traffic volume increase is expected at the Eighth Avenue and West 34th Street intersection. The results of the air quality analysis from the ARC DEIS show that the PM_{10} and CO NAAQS, the CO *de minimis* increment, and New York City Department of Environmental Protection (NYCDEP) $PM_{2.5}$ threshold level would not be exceeded at any of the intersections analyzed. Therefore, there would be no adverse cumulative effects associated with the Portal Bridge project.

Contaminated Materials

The potential for cumulative effects is related to the construction of certain elements of other projects in the study area that would also potentially result in the disturbance of contaminated and/or hazardous materials. This additional disturbance increases the potential for adverse ecological and human health effects if construction in these areas is not conducted properly. Specific project elements of concern include work proposed within the Malanka Landfill, Standard Chlorine property, and Diamond Shamrock property. As part of the ARC project, tracks will be constructed to connect to the new southern bridge over the Hackensack River. These tracks would require subsurface disturbance to the Malanka Landfill. Similarly, the lead tracks that may be constructed between Kearny Yard and the new southern bridge would require construction through the Diamond Shamrock and Standard Chlorine sites (as discussed in Chapter 5.7, Standard Chlorine is a Superfund site and Diamond Shamrock is a known contaminated site). Construction on these sites requires careful coordination with the ongoing investigations and studies related to the eventual remediation of these properties. Similar to the measures presented in Chapter 5.7 for the Portal Bridge project, the ARC project also includes measures to avoid or minimize the adverse effects of its construction within these contaminated areas. Construction of the Kearny Yard lead tracks through Diamond Shamrock and Standard Chlorine would be implemented with measures to avoid and minimize adverse effects, thereby diminishing the potential for adverse cumulative effects with respect to contaminated materials.

Construction Impacts

The potential for cumulative construction effects from the Portal Bridge and ARC projects is an important component of this analysis. Based on the projected project schedules, construction of the two projects would most likely overlap in the southeastern corner of the study area. In this area, ARC would be constructing the loop tracks from the Main/Bergen County and Pascack Valley Lines as well as the tracks leading to the southern Portal Bridge. The ARC project would also require modifications to the existing southside of the Secaucus Transfer Station. The Portal Bridge project would be constructing the approach to the southern bridge in this area, including a bridge over the planned loop tracks.

Construction in this area would be closely coordinated between the two projects to minimize disruption and adverse cumulative effects. As discussed previously, the area surrounding the project site is a mix of open space and wetlands, utility and transportation corridors, a rail station and a former landfill. These surrounding land uses would substantially reduce any potential for air quality and noise impacts on sensitive uses or populations. Therefore, the potential for cumulative construction impacts to noise levels and ambient air quality would be very small due to the lack of sensitive receptors. As discussed below, possible cumulative noise effects are a concern with respect to possible wildlife in the area. The potential cumulative issues as they relate to construction of the two projects include:

- Adverse impacts on public transportation (i.e., Amtrak and NJ TRANSIT) along the Northeast Corridor and at Secaucus Transfer Station.
- The cumulative effect on wetlands and ecological resources including the potential adverse effects on existing wildlife in the Riverbend Wetland Preserve. These impacts could include both direct disturbance to the habitat as well as indirect disturbances due to elevated noise levels on nesting birds.
- Potential cumulative effects from disturbance and release of contaminated and/or hazardous materials into the surrounding environment including wetlands and open water such as the Hackensack River.

Each of these issues was discussed in Chapter 6, "Construction Impacts," as they relate to the construction of the Portal Bridge build alternatives. Measures were proposed to avoid, minimize, or mitigate the potential adverse effects of construction on the resources. The ARC project has also proposed mitigation measures in its environmental documents. As both projects move forward into the permitting stage, they will continue their close coordination to ensure that the cumulative effects of construction in this area of the Meadowlands District are minimized to the extent feasible. For example, it may be beneficial for the projects to share access roads, work platforms and other unavoidable disturbances to wetlands and upland habitats.

STEP 10: MODIFY OR ADD ALTERNATIVES TO AVOID, MINIMIZE, OR MITIGATE SIGNIFICANT CUMULATIVE EFFECTS.

As discussed in the previous sections, the potential for cumulative adverse effects for the Portal Bridge project are related primarily to ecological and cultural resources. In an effort to avoid and minimize the project's adverse effect on the ecological resources of the study area, specifically the wetlands and wildlife habitat of the Meadowlands District, the build alternatives have been developed to limit the extent of the project impacts. Wherever feasible, the project proposes to construct the track through wetlands or open water on elevated structures rather than on filled embankment. Toe walls and retained embankments would also be used to limit the disturbance to existing wetlands. In addition, the project proposed mitigation measures including the restoration, enhancement and creation of wetlands as required by the permitting agencies. With respect to potential cumulative effects on the Portal Bridge and the Pennsylvania Railroad Historic District, the impacts of the build alternatives are unavoidable in that the resource itself is part of the project. The needed improvements to the regional rail system require that the resource be reconstructed and/or replaced. Since the adverse effect is unavoidable, measures have been proposed to mitigate the loss of these historic resources. ✷

A. INTRODUCTION AND METHODOLOGY

Section 4(f) of the U.S. Department of Transportation (USDOT) Act of 1966 (49 USC § 303) prohibits the Secretary of Transportation from approving any program or project that requires the use of: (1) any publicly owned land in a public park, recreation area, or wildlife and waterfowl refuge of national state, or local significance, or (2) any land from a historic site of national, state, or local significance (collectively "Section 4(f) resources"), unless there is no feasible and prudent alternative to the use of such land and the project includes all possible planning to minimize harm to the resource.

The Federal Highway Administration (FHWA) and the Federal Transit Administration (FTA) updated their joint Section 4(f) regulations (23 C.F.R. Part 774) in March of 2008 to modify the procedures for granting Section 4(f) approvals. The regulations were updated to clarify language in regards to the factors to be considered and the standards to be applied when determining if an alternative that would avoid the use of a Section 4(f) property is feasible and prudent, and in the case of selecting a project alternative when all alternatives would use some Section 4(f) property. In addition, the new regulations established procedures for determining that the use of a Section 4(f) property has a *de minimis* impact on the property, described further below. While the regulations do not apply directly to Federal Railroad Administration (FRA) projects, they do provide guidance that FRA uses in making its own Section 4(f) determinations.

The USDOT and FRA consider three possible ways in which a project could "use" a resource:

- When land is permanently incorporated into a transportation facility;
- When there is a temporary occupancy of land that is adverse in terms of the statute's preservation purpose; or
- When there is a constructive use of land.

Constructive use occurs when the project does not directly incorporate land from a Section 4(f) resource, but the project's impacts are so severe that the protected activities, features, or attributes that qualify a resource for protection under Section 4(f) are substantially impaired. Substantial impairment occurs only when the protected activities, features, or attributes of the resource are substantially diminished.

Pursuant to 49 U.S.C. § 303(d)(2), FRA may satisfy the requirements of Section 4(f) by finding that a transportation project will have a "*de minimis*" impact on a historic resource. A finding of *de minimis* impact is, in essence, a finding that the project will not adversely affect the qualities of the resource that make it eligible for protection under Section 4(f). FRA can make a finding of *de minimis* impact for a historic site if: (1) FRA determines through the Section 106 consultation process that a transportation project will have "no adverse effect" on the site; (2) the SHPO (and the Advisory Council on Historic Preservation, if participating) concurs in writing with FRA's

de minimis impact finding; and (3) FRA's finding has been developed in consultation with parties consulting as part of the Section 106 process.

In making a finding of *de minimis* impact, FRA shall consider to be part of the transportation program or project "any avoidance, minimization, mitigation, or enhancement measures that are required to be implemented as a condition of approval" of the project. This means that the finding of *de minimis* impact takes into account any measures that may offset the impacts of the project on a Section 4(f) resource. For historic sites, a finding of *de minimis* impact satisfies the requirements of Section 4(f) in full. Therefore, if a finding of *de minimis* impact is made for a historic site, no further Section 4(f) analysis is required for that site.

The sections below describe the applicability of Section 4(f) to the project, the use of Section 4(f) properties, avoidance alternatives to the use of the Section 4(f) properties, and measures to minimize harm to the Section 4(f) properties.

B. APPLICABILITY OF SECTION 4(F) TO THE PROJECT

PROJECT DESCRIPTION

The Portal Bridge Capacity Enhancement Project is being proposed to enhance the capacity and improve the operation of the Portal Bridge, a passenger rail bridge over the Hackensack River. The Portal Bridge project would include the following:

- Decommissioning and removal of the existing Portal Bridge;
- Construction of a new three-track fixed northern bridge at a height of 50 feet above mean-high-water (MHW) and related approach structures;
- Construction of a new two-track moveable southern bridge at a height of 40 feet above MHW and related approach structures;
- A new track configuration between Swift Interlocking and Secaucus Transfer Station, including a grade-separated crossing of the Northeast Corridor;
- New ancillary equipment such as signal and communication systems, traction power supply and distribution, catenary and communication support structures;
- New bridges over Newark Turnpike, former Erie Newark-Paterson Branch right-of-way, Belleville Turnpike, former Erie Arlington Branch right-of-way, and the Boonton Line.

The four build alternatives differ primarily in two respects the location of the southern bridge (either on the alignment of the existing Portal Bridge or on a new southern alignment) and the type of grade-separated crossing provided for Track 5 (duck-under or fly-over). Four feasible build alternatives have been identified and evaluated in this Final EIS:

- Preferred Alternative DS—This alternative would include a three-track fixed northern bridge, a two-track moveable southern bridge built on a new southern alignment, and a duck-under structure for Track 5;
- Alternative DE—This alternative would include a three-track fixed northern bridge, a two-track moveable southern bridge built on the existing alignment, and a duck-under structure for Track 5;
- Alternative FE—This alternative would include a three-track fixed northern bridge, a two-track moveable southern bridge built on the existing alignment, and a fly-over structure for Track 5;

- Alternative FS—This alternative would include a three-track fixed northern bridge, a two-track moveable southern bridge built on a new southern alignment, and a fly-over structure for Track 5.

SECTION 4(f) APPLICABILITY

This Section 4(f) evaluation identified the presence of Section 4(f) resources and determined whether the proposed project would use these resources. All four build alternatives would require the decommissioning and removal of the existing Portal Bridge. The Portal Bridge was determined eligible for the National Register of Historic Places (NR) in 1978; and was listed on the New Jersey State Register (SR) in 1982. The bridge is also a contributing element in the Pennsylvania Railroad Historic District, determined S/NR-eligible in 1978. All build alternatives would also require the use of land in Hudson County Park at Laurel Hill, a county park located adjacent to the Northeast Corridor on the eastern shore of the Hackensack River (also referred to as "Laurel Hill Park"). Lastly, all build alternatives would require excavation in the area of sensitivity for the Historic Cemeteries of Hudson County (an S/NR-eligible archaeological resource north of the Northeast Corridor and to the west of Secaucus Transfer Station). The proposed project would constitute a use of these four Section 4(f) resources (shown in Figure 8-1) and necessitate a Section 4(f) analysis.

Two of the four build alternatives would also require acquisition of land in the Riverbend Wetland Preserve. The site was purchased by the NJMC in 1996 for the purpose of wetland preservation; however, it does not qualify as a Section 4(f) resource, since it is not officially designated as a wildlife or waterfowl refuge. It is, however, afforded regulatory protection as a wetland under Section 404 of the Clean Water Act, New Jersey's Waterfront Development Act (N.J.A.C. 7.7), Flood Hazard Area Control Act (N.J.A.C. 7:13), and other regulations. The project's effects on this resource were discussed in this Final EIS (Chapter 5.6, "Ecology").

The four build alternatives would be adjacent or in close proximity to three known historic resources—the Jersey City Waterworks Pipeline (S/NR-eligible), Substation 4 (S/NR-eligible), and the WMCA 570 Radio Station Relay/Transmitter Building (S/NR-eligible). The four build alternatives would not adversely affect these properties; therefore, this would not constitute as a Section 4(f) use of these properties and a separate analysis of these properties is not necessary.

C. USE OF SECTION 4(f) PROPERTIES

PORTAL BRIDGE

DESCRIPTION OF THE SECTION 4(f) PROPERTY

The Portal Bridge carries the Northeast Corridor over the Hackensack River between Secaucus and Kearny. It is a two-track seven-span bridge with six deck-girder spans and a center-bearing Warren through-truss swing-span. The Bessemer steel superstructure is raised 23 feet above MHW on rock-faced piers. The Portal Bridge was manufactured and designed by the Pennsylvania Steel Company in 1907 as part of original construction of the Pennsylvania Railroad system. The Portal Bridge was determined eligible for the NR in 1978 and was listed on the SR in 1982. The bridge is also a contributing element in the Pennsylvania Railroad Historic District, determined S/NR-eligible in 1978.

1.3.08

NJ TRANSIT
PORTAL BRIDGE CAPACITY
ENHANCEMENT PROJECT

Section 4(f) Properties

Figure 8-1

PROBABLE USE OF THE SECTION 4(f) PROPERTY

Preferred Alternative DS

In Alternative DS, two new bridges would be built on either side of the existing Portal Bridge. The existing Portal Bridge would be decommissioned and removed. The removal of the existing Portal Bridge would constitute a use of this Section 4(f) resource.

Alternative DE

Construction of Alternative DE would entail the decommissioning and removal of the existing Portal Bridge in order to construct a new moveable bridge in its place. The removal of the existing Portal Bridge would constitute a use of this Section 4(f) resource.

Alternative FE

Construction of Alternative FE would entail the decommissioning and removal of the existing Portal Bridge in order to construct a new moveable bridge in its place. The removal of the existing Portal Bridge would constitute a use of this Section 4(f) resource.

Alternative FS

In Alternative FS, two new bridges would be built on either side of the existing Portal Bridge. The existing Portal Bridge would be decommissioned and removed. The removal of the existing Portal Bridge would constitute a use of this Section 4(f) resource.

AVOIDANCE ALTERNATIVES

Under Section 4(f), it must be demonstrated that any alternatives that avoid the use of the historic structure, known as "Avoidance Alternatives," are either not feasible or would not be prudent to undertake. To demonstrate that no feasible and prudent alternatives to the use of the Section 4(f) resource exist, location alternatives and design options should be considered. The following alternatives would avoid removal of the historic bridge and were considered:

- Rehabilitate the existing Portal Bridge without affecting the historic integrity of the structure as determined by the National Historic Preservation Act (NHPA) and reuse the bridge for rail traffic.
- Build two new bridges at locations farther from the existing bridge and leave the existing bridge in place.

In finding that an alternative is not feasible or prudent, adverse factors such as environmental impacts, safety, engineering/operational deficiencies, poor transportation service, increased costs, and other factors may be considered collectively. These factors have been considered in determining whether the avoidance alternatives would be feasible and prudent.

Rehabilitate Existing Portal Bridge

Under this alternative, the existing Portal Bridge would be rehabilitated and used for rail service along the Northeast Corridor. It is assumed that a second bridge would be constructed with three tracks to provide the required connectivity between Swift Interlocking and Secaucus Transfer Station.

The Portal Bridge was put into service in 1910 and has been in operation for almost 100 years, which is the intended life for this structure. The swing span experiences cyclic loading from

opening and closing of the bridge, in addition to the typical live load cyclic loading that a fixed span experiences. The combination of these cycles and their respective induced stress range act to consume the fatigue life of the bridge. Currently, only some of the structural members of the bridge satisfy the current fatigue design provisions using the design train recommended in AREMA (Cooper E-80). To meet the current fatigue design criteria, the loading on the bridge would have to be limited to a train no greater than a Cooper E-31.[1]

As expected, the Portal Bridge has become less reliable with age. Reliability was measured based upon the number of days between failure events over an 11-year period for which data was available. The number of days between failures ranged from 0 (i.e., more than one failure occurred on the same day) to 325 days. The 11-year average was one failure every 20.8 days. Furthermore, the number of days between failures has been decreasing steadily, which shows that the bridge requires more and more maintenance as it ages. The bridge's reliability would likely increase after a rehabilitation but would not be as reliable as a new vertical lift or fixed bridge. Upon rehabilitation, there would still be 100-year-old components in service. As those components continue to wear, the trend of increased failure frequency would continue. It would be very difficult to rehabilitate the existing bridge to achieve the level of reliability that a new bridge could provide. As an almost 100-year old structure, the existing Portal Bridge would not provide the same benefit as a new bridge in terms of operational life-span, and would require more maintenance and potentially require replacement in the near future.

Reuse of the existing bridge would also subject trains to conflicts with maritime uses on the Hackensack River. The lowest portion of the existing bridge is 23 feet above MHW. As a result, marine traffic along this segment of the Hackensack River requires the frequent opening of the Portal Bridge and disruption of train traffic along the Northeast Corridor. In spite of restrictions that limit the times of day when the bridge can be opened for marine traffic, NJ TRANSIT and Amtrak's services are affected by bridge openings. Between April 2004 and April 2006, the Portal Bridge was opened over 600 times to accommodate marine traffic. Additionally, bridge malfunctions causes delays that cascade from the non-peak period into the peak period. If the Portal Bridge were to be reused, rail traffic would continue to be subject to this recurring problem.

Finally, reuse of the existing bridge for passenger rail traffic would subject trains to the existing speed restrictions imposed due to the special rail connections on the existing bridge, known as "miter rails." These rails allow the swing span portion to disengage from the rest of the bridge and open for marine traffic. The rate of wear on these miter rail connections is worsened with higher train speeds and frequencies. As a result, while trains can operate at 90 miles per hour (mph) on adjacent portions of the Northeast Corridor, speeds on the Portal Bridge were previously been restricted to 70 mph, and most recently (December 2006) have been permanently restricted to 60 mph.

In summary, reuse of the existing Portal Bridge would continue to subject Amtrak and NJ TRANSIT trains to the delays and problems associated with the existing bridge's design and age and would be cost-inefficient. This would not be consistent with the project's goals, which emphasize enhancing capacity of this Hackensack River crossing, improving service reliability

[1] A Cooper E loading is an engineering design standard that reflects the weight of the train per axle, along with other factors such as impact, sideways imbalances, longitudinal forces, multiple tracks, different values for reaction, and shear & moment that all differ depending on span length. Generally, the higher the Cooper E loading, the heavier the train (assuming an equal number of axles).

and operational flexibility and minimizing conflicts with maritime traffic. Although it would be feasible to reuse the existing bridge for rail traffic, it would not be prudent to expend capital funds and not meet the given goals of the project to enhance the capacity of the Northeast Corridor's Hackensack River crossing.

Build New Bridges on New Alignments and Leave Portal Bridge in Place

This alternative is similar to two of the four alternatives considered in the EIS, except that the existing Portal Bridge would remain in its existing location. Two options were considered in this analysis:

1) Construct two new bridges near the existing Portal Bridge, similar to Alternatives DS and FS, and leave the existing bridge in place.
2) Leave the existing bridge in place and construct two new bridges much farther apart, minimizing the effects of the new structures on the historical integrity and context of the existing Portal Bridge.

The second option would neither be feasible nor prudent because of engineering and environmental reasons. This would require altering the approaches and the existing infrastructure at Secaucus Transfer Station and Swift Interlocking, as well as dramatically increasing the right-of-way requirements. The analysis that follows focuses on the first option of retaining the existing Portal Bridge between the two new bridges, but no longer using it for rail service. In all cases, it is assumed that the United States Coast Guard (USCG) would require that the bridge be fixed in the open position for navigational purposes, similar to the "DB Swing" Bridge that crosses the Hackensack River to the north of the Portal Bridge.

With the Portal Bridge and its pivot pier remaining in place, boats traversing the Hackensack River would continue to have to maneuver between the bridge's pivot pier and two supporting piers (which consist of two spaces 99 feet wide). This would eliminate one of the project's main benefits of increasing the width of the navigable channel at this portion of the river. Leaving the existing pivot pier in place would be considered a hazard to navigation for the following reasons:

- The navigable channel near the Portal Bridge is in a curve of the Hackensack River, making navigating this reach difficult even without a second and third bridge to maneuver beneath.
- The existing 99-foot channels are narrow by today's standards and would unlikely be approved for a new bridge.
- The length of the existing pivot pier protective fenders does not allow vessels to correct their course between the new bridge piers, leaving little or no room for error.

The existing Portal Bridge's swing span is 300 feet long and is bisected by a pivot pier. The span swings open to an angle of 68 degrees, approximately parallel to the river's navigation channel. If the existing bridge were to be kept in place and locked in the open position, the new northern and southern bridges would have to be built at least 190 feet from the centerline of the existing Northeast Corridor to avoid fouling the bridge's swing span. Doing so would eliminate any possibility of constructing the southern bridge or the northern bridge closer to the Northeast Corridor alignment or minimizing property acquisitions as project engineering continues further.

While this alternative would be physically possible to construct, it would not be prudent. Retention of the existing Portal Bridge would conflict with two of the project's goals. The retention of the existing center pier would not limit the project's ability to minimize conflicts

with marine traffic, and the retention of the existing bridge would also limit the project's ability to minimize property takings.

MEASURES TO MINIMIZE HARM

As mandated by Section 106 of the NHPA of 1966, Amtrak and NJ TRANSIT have participated in an ongoing consultation process with the New Jersey Historic Preservation Officer (NJHPO) with respect to potential effects on archaeological and architectural resources. As part of this ongoing process, measures have been and will continue to be explored to avoid or minimize to the extent practicable any adverse effects to archaeological and architectural resources. Development of these mitigation measures is set forth in the Memorandum of Agreement (MOA), executed by NJHPO, FRA, Amtrak and NJ TRANSIT. The MOA is included in Appendix B. The MOA lists the historic resources that may be affected by the project and also describes the continuing consultation process that will be conducted as project designs evolve. The MOA also describes the measures to be implemented during the project's design process, to avoid, minimize, or mitigate adverse effects of the project on historic resources.

In the case of the Portal Bridge, mitigation for adverse effects could include Historic American Engineering Record (HAER) documentation of the bridge, archival photographic documentation, salvage of elements of historic resources, development of an interpretive exhibit in a park, greenway, or public space that would present the history of the Pennsylvania Railroad and Portal Bridge and possibly include salvaged elements of the resources, and/or a website that could include written narratives, historic and recent photography, and video of the bridge operating.

PENNSYLVANIA RAILROAD HISTORIC DISTRICT

DESCRIPTION OF THE SECTION 4(f) PROPERTY

The segment of the Northeast Corridor that would be affected by the proposed project is a part of the Pennsylvania Railroad New York to Philadelphia Historic District (referred to herein as the Pennsylvania Railroad Historic District). The extension of the Pennsylvania Railroad, built over the first decade of the twentieth century, consisted of eight miles of electrified rail line between Midtown Manhattan and Newark, New Jersey. The same project also included the construction of New York Pennsylvania Station (PSNY) and a system of railroad tubes beneath the Hudson River between New York and New Jersey (completed in 1910). The Pennsylvania Railroad system included several bridges that carry the railroad over water, marsh, and other railroads. Of the three center-bearing swing bridges that were constructed as part of the original system, the Portal Bridge is the only one remaining. The Pennsylvania Railroad, now known as the Northeast Corridor, was determined eligible for the S/NR on January 18, 1978. While Pennsylvania Railroad Historic District retains historic integrity overall, it should be noted that the historic district in the study area has undergone extensive alterations since the time of its S/NR eligibility determination.

PROBABLE USE OF THE SECTION 4(f) PROPERTY

Preferred Alternative DS

Construction of Alternative DS would entail the decommissioning and removal of the existing Portal Bridge, shifting the vertical and horizontal alignment of the Northeast Corridor to connect with the new northern and southern bridges, and replacement of portions of the railroad's

physical fabric. Alternative DE would require: replacing the existing signal system between Swift Interlocking and Secaucus Transfer Station; relocating fiber optic cables; relocating an existing communications node house including fiber optic modems, telephone extenders, and a radio base station for communications along the Northeast Corridor; and relocating the existing overhead wire system that provides traction power to the trains (catenary system). This work would adversely affect the Pennsylvania Railroad Historic District. The anticipated effects of the Alternative DE would add to the cumulative alterations of the resource's original fabric and appearance that have occurred in the study area in recent decades. These activities would constitute a use of this Section 4(f) resource.

Alternative DE

Alternative DE would entail the decommissioning and removal of the existing Portal Bridge in addition to shifting the alignment of the Northeast Corridor, and replacing portions of the railroad's physical fabric as discussed for Alternative DS. These activities would constitute a use of this Section 4(f) resource.

Alternative FE

Alternative FE would entail the decommissioning and removal of the existing Portal Bridge in addition to shifting the alignment of the Northeast Corridor, and replacing portions of the railroad's physical fabric as discussed above. These activities would constitute a use of this Section 4(f) resource.

Alternative FS

Alternative FS would entail the decommissioning and removal of the existing Portal Bridge in addition to shifting the alignment of the Northeast Corridor, and replacing portions of the railroad's physical fabric as discussed above. These activities would constitute a use of this Section 4(f) resource.

AVOIDANCE ALTERNATIVES

As stated above, location alternatives and design options should be considered to demonstrate that no feasible and prudent alternatives to the use of the Section 4(f) resource exist. To avoid a use of the Pennsylvania Railroad Historic District, the following alternatives would avoid removal of the historic bridge and were considered:

- Rehabilitate the existing Portal Bridge on its existing alignment without affecting the historic integrity of the structure as determined by the National Historic Preservation Act (NHPA) and reuse the bridge and existing Northeast Corridor for rail traffic, in addition to construction of a new three-track bridge.
- Build two new bridges and connections to the existing Northeast Corridor at locations farther from the existing bridge and leave the existing bridge and the Northeast Corridor in place with its historical integrity unaffected.

Rehabilitate Existing Portal Bridge

This alternative was discussed in the previous section for the use of the Portal Bridge (a Section 4(f) resource). It would include rehabilitating the Portal Bridge and continuing to use it for rail service along the Northeast Corridor. It is assumed that a second bridge would be constructed with three tracks to provide the required connectivity between Swift Interlocking and Secaucus Transfer Station.

As discussed above, rehabilitation of the Portal Bridge would not alleviate many of the problems associated with the existing bridge. Upon rehabilitation, there would still be 100-year-old components in service and the trend of increased failure frequency would continue. It would require additional maintenance and potentially require replacement in the near future. Reuse of the existing bridge would not alleviate the conflict between trains and maritime users on the Hackensack River since the raising of the bridge would not be part of the avoidance alternative. Additionally, current bridge malfunctions and speed restrictions (caused by the miter rails) would continue with reuse of a rehabilitated Portal Bridge.

Rehabilitation and reuse of the existing Portal Bridge would continue to subject Amtrak and NJ TRANSIT trains to the delays and problems associated with the existing bridge's design and age. This would be an inefficient use of funds and would not be consistent with the project's goals, which emphasize enhancing capacity of this Hackensack River crossing, improving service reliability and operational flexibility and minimizing conflicts with maritime traffic. Although it would be feasible to reuse the existing bridge for rail traffic, it would not be prudent to expend capital funds and not meet the goals of the project to enhance the capacity of the Northeast Corridor's Hackensack River crossing.

This avoidance alternative would also require the construction of a three-track fixed bridge and approach structures sufficiently removed from the current alignment to avoid adverse contextual impacts to the District. It is assumed for the purposes of this avoidance alternative that the new tracks would connect to the Northeast Corridor in locations that were previously altered (e.g., Secaucus Transfer Station and the point where the Morris & Essex Line tracks join the corridor) to avoid adverse effects to the District and any use of the Section 4(f) resource. This alternative would dramatically increase the right-of-way requirements resulting in substantial environmental and economic/business impacts, which would not be prudent. Furthermore, as discussed below, it may not be feasible to make the necessary track connections and capacity improvements without altering the historic integrity of the Northeast Corridor. Therefore, this avoidance alternative would to fail meet most of the project goals and objectives and would entail substantially more environmental and economic impacts.

Build New Bridges on New Alignments and Leave Portal Bridge and Northeast Corridor in Place

This alternative would require construction of two new bridges far from the existing Portal Bridge and two new rail connections that would avoid this segment of the Northeast Corridor. To preserve the historical integrity of all aspects of the Northeast Corridor, no modifications would be made to the segment between Kearny Junction Interlocking and Secaucus Transfer Station. In this alternative, the new bridges would connect to new rail lines on either side of the Hackensack River. These new rail lines would connect with the existing Northeast Corridor at Kearny Junction Interlocking to the west and Secaucus Transfer Station to the east. Since substantial modifications to the Northeast Corridor have been made in recent years at these two locations, work in these locations would be unlikely to result in an adverse effect to the Pennsylvania Railroad Historic District. All new work needed for the rail connections (replacing the existing signal system, relocating fiber optic cables and communication systems, and relocating the catenary system) would take place off-line of the Northeast Corridor. The existing Portal Bridge would be locked in the open position to facilitate maritime traffic and would not be used for rail service.

This alternative would not be prudent because of safety, engineering, environmental, and economic reasons. It would require altering the existing infrastructure at Secaucus Transfer

Station and Kearny Junction Interlocking, as well as dramatically increasing the right-of-way requirements for the new bridges and approach tracks. The right-of-way requirements would include substantial acquisition of private property, displacement of existing businesses, and additional wetlands and open water filling. Locking the existing Portal Bridge in the open position would permit marine vessels to pass, but navigation would continue to be restricted. With the Portal Bridge and its pivot pier remaining in place, boats traversing the Hackensack River would continue to have to maneuver between the bridge's pivot pier and two supporting piers (which consist of two spaces 99 feet wide).

While this alternative would be physically possible to construct, it may not be operationally feasible since the connection between the new rail infrastructure and the historic Northeast Corridor would need to be constructed in a limited space to avoid any use of the Section 4(f) resource. This space limitation would most likely limit the design speed of the interlockings, resulting in adverse effects on rail operations. The space limitations would also greatly increase the likelihood of adversely affecting railroad operations during construction. Even if it were possible to design and construct a four-track railroad that would not adversely affect the integrity of this segment of the District, it would not be prudent from a cost, environmental and community/business disruption perspective. Furthermore, retention of the existing Portal Bridge and this segment of the Northeast Corridor (without modifications) would conflict with two of the project's goals.

MEASURES TO MINIMIZE HARM

As set forth in the project's MOA, mitigation of the adverse effects on the existing Portal Bridge was presented with measures to mitigate the project's adverse effect on the Pennsylvania Railroad Historic District. Therefore, the measures discussed above for minimizing harm from the removal of the Portal Bridge would also minimize harm to the Pennsylvania Railroad Historic District. Potential measures include HAER documentation, salvage of elements of historic resources, development of an interpretive exhibit in a park, greenway, or public space that would present the history of the two resources and possibly include salvaged elements of the resources, and/or a website that could include written narratives, historic and recent photography, and video of the bridge operating. Ongoing consultation would be undertaken among FRA, NJHPO, Amtrak, and NJ TRANSIT as project designs progress, to minimize or mitigate the potential for adverse effects to the Pennsylvania Railroad Historic District.

HUDSON COUNTY PARK AT LAUREL HILL

DESCRIPTION OF THE SECTION 4(f) PROPERTY

Hudson County and the NY/NJ Baykeeper recently acquired a 14.9-acre parcel of wetlands under the provisions of the Green Acres Program; the expansion parcel is located south of the New Jersey Turnpike and the existing Laurel Hill Park is located on the north side of the New Jersey Turnpike. The New Jersey Meadowlands Commission (NJMC), in partnership with Hudson County and the NY/NJ Baykeeper, has plans for wetland restoration in this parcel and in the existing park. In the expansion parcel, plans include grading of the 14.9 acres of wetland to support marsh grass growth and wildlife, and a new boardwalk and fishing pier along the shoreline.

PROBABLE USE OF THE SECTION 4(f) PROPERTY

Preferred Alternative DS

Alternative DS would require the use of 2.0 acres of the expanded Laurel Hill Park. This land would be required for the approach structure for the northern bridge, as well as for a temporary access road that may, in part or whole, become permanent. This 33-foot-wide roadway would run parallel to the approach structure between the park and the bridge. The bridge approach would be constructed on piers which would be spaced approximately 150 feet apart. The conversion of parkland to approaches for the bridge and an access road would constitute a use of this Section 4(f) property.

Alternative DE

Similar to the other build alternatives, DE would require the acquisition of 2.0 acres of Laurel Hill Park for the construction of the northern approach structure and an access road and constitute a use of Section 4(f) property.

Alternative FE

Similar to the other build alternatives, Alternative FE would require the acquisition of 2.0 acres of Laurel Hill Park for the construction of the northern approach structure and an access road, which would constitute a use of the Section 4(f) property.

Alternative FS

Similar to the other build alternatives, Alternative FS would require the acquisition of 2.0 acres of Laurel Hill Park for the construction of the northern approach structure and an access road constituting a use of the Section 4(f) property.

AVOIDANCE ALTERNATIVES

As discussed above, Section 4(f) requires the assessment of alternatives that would avoid the use of the particular resource impacted. There are two avoidance alternatives to the construction of the northern bridge in the Laurel Hill Park as follows:

- Construction of the northern bridge on the existing Northeast Corridor alignment and the construction of the second bridge south of the existing alignment.
- Moving the northern bridge closer to the existing bridge and changing the alignment of Tracks 2 through 4 on the approach structure.

Northern Bridge on Existing Alignment

Under this avoidance alternative, the southern bridge would be constructed first, followed by the removal of the existing bridge. The second bridge would then be constructed with its approaches on a raised embankment along the existing alignment. Once the first bridge is constructed, all existing Northeast Corridor rail traffic (both NJ TRANSIT and Amtrak) would operate on the southern bridge for an extended period of time while the existing embankment is raised and the second bridge constructed. In addition, extensive modifications would be necessary to allow westbound trains to utilize the southern crossing which would still result in reduced operational service as discussed below.

Track 3 is the westbound main track on the Northeast Corridor through the study territory. Track A extends westward from the Secaucus Transfer Station until it merges with Tracks 2 and 3 at

Portal Interlocking, just east of the river crossing (see Figure 3-5 in Chapter 3). In order to "cut and throw" (i.e., move) existing Northeast Corridor Tracks 3 and A to the southern alignment via a temporary connecting track, the existing track junctions situated immediately east of the existing Portal Bridge would need to be dismantled and replaced by a temporary bridge and fill to carry the connecting track over to the proposed southern alignment. In this area, the approach to the southern bridge would be diverging away to the southwest from the existing Northeast Corridor alignment.

Once the fill and bridge is completed, a train control ("signal") system and temporary catenary would be constructed. As much work as possible would be completed off line, with trains continuing to use existing Tracks 3 and A until progress on the connector reached the point where the existing tracks would need to be severed. At the critical construction stage when the temporary westbound connector is being physically connected and commissioned ("cut in"), a short segment of single-track operation via future Crossover 52 would be unavoidable. This would adversely impact peak period train operations for a minimum of a long weekend to a maximum of several weeks depending on engineering and logistical issues.

Additionally, the close proximity of the east bank of the Hackensack River represents a severe geographic and geometric constraint in that the temporary connector would need to curve sharply to the southwest from the existing Northeast Corridor alignment in order to join the southern bridge approach east of the river crossing. This would require a sharp reverse curve in the temporary alignment that would be in service during the entire construction period of the second river bridge. This geometry would impose a substantial speed restriction that would persist until the second bridge was operational.

The same geometric constraint could also cause substantial modifications to adjacent Lack Interlocking, which was completed less than ten years ago. These modifications would include, but not be limited to, dismantling and removing physical obstructions such as catenary support poles and signal masts. One or more signal instrument houses ("bungalows") could also be impacted. Lack Interlocking as well as Portal Interlocking would need to be restored to a state similar to their current configuration (with the addition of proposed Track 4) when the second bridge is completed. This would also disrupt train operations. The work required for erecting temporary catenary and then removing is substantial, and therefore, restoration of the permanent infrastructure would take longer and be more costly than it would be for a non-electrified railroad.

Therefore, this avoidance alternative would not be prudent because it would require extensive and expensive additional construction at Lack and Portal Interlocking and would result in severe speed restrictions and delays to the travelling public for several years while the existing alignment is reconfigured and a second bridge is constructed. Furthermore, there would be little or no justification for retaining this connection after completion of the second bridge. Project costs would be increased accordingly with numerous additional structures and retaining walls, such as an additional duck-under below the northern tracks (and additional elevated structure to split out Tracks A and 3 to the existing alignment location) on the east side of the Hackensack River.

Move Northern Bridge Closer to Existing Bridge

Under this avoidance alternative, the northern bridge would be constructed within the arc of the swing span of the existing Portal Bridge. This would require a temporary closure of the channel to float the middle truss of the northern bridge as the last step in the construction process. There

are several issues related with this alternative and the resultant alignment would still require some acquisition of parkland.

Marine traffic would be adversely affected while the new span is floated in and both Tracks 2 and 3 are put into service before the existing bridge is removed. This delay would most likely be unacceptable to the maritime community due to the length of time to cut both tracks in service. While the new middle span could be floated in a relatively short timeframe, additional track work must be performed before the existing span could be taken out of service. In the current construction staging plan, only one track is moved to the northern bridge in the first stage of construction. However, the avoidance alternative would require both eastbound and westbound tracks to be moved to the new northern bridge at the same time resulting in a extended closure of the navigational channel to marine traffic.

Moving the northern bridge closer to the existing structure would entail additional problems during construction. The construction of the new bridge in close proximity to the existing structure would further exacerbate the navigability between the new structures during construction and demolition. In addition, the construction of the approach structures to the bridge would be more difficult due to space limitations and vibration related impacts may be problematic due to the shorter distance between the old and new foundations. This would result in higher degree of risk to the existing structure and rail operations along the heavily-travelled Northeast Corridor.

If constructed, with the track centers closer, the skew angle of the grade-separation structure on the west approach would be lengthened considerably, substantially increasing the cost of the northern bridge. Furthermore, the shortening of the profile by aligning closer to the existing bridge would provide less runoff and therefore a greater grade for the approach adversely affecting rail operations between Secaucus and the Hackensack River.

This avoidance alternative, which would still require some acquisition of the proposed park, would not be prudent due to its substantial negative effect on the navigational channel and constructability as well as its adverse effects on rail operations and project costs.

MEASURES TO MINIMIZE HARM

As discussed in detail in Chapter 5.1, "Land Use and Social Conditions," the expansion parcel at Laurel Hill Park was purchased by Hudson County and the NY/NJ Baykeeper using Green Acres funding, thence making the NJDEP Green Acres Program the advisory committee in charge of mitigating the loss of a portion of the expansion parcel. The Green Acres Program offers funding to local governmental units and nonprofits to assist in the conservation of public open space and protection of existing natural resources and wildlife habitats in the State of New Jersey. Additionally, the program has established restrictions and compensation requirements that must be adhered to by any nonprofit or local government unit that wishes to use Green Acres funded property for anything other than outdoor recreation and/or conservation purposes. The project sponsors will continue to work with Hudson County, NY/NJ Baykeeper, NJDEP's Green Acres Program, and NJMC to develop appropriate mitigation measures for the loss of a portion of the planned open space area.

Proposed mitigation measures for the loss of this Section 4(f) property could include the following:

- Replacement parkland possibly with the purchase of new open space or through the development of a conservation easement;

- Improvements to the existing Laurel Hill Park;
- Improvements to the future park at the expansion parcel that would also provide waterfront access as envisioned by the coastal zone management regulations;
- Linear access to the Hackensack River to be located on either side of the river to the extent feasible and in consideration of potential security concerns (which would adhere to existing coastal zone management and waterfront access regulations).

HISTORIC CEMETERIES OF HUDSON COUNTY

DESCRIPTION OF THE SECTION 4(f) PROPERTY

The Historic Cemeteries of Hudson County were established in 1880. The burial grounds were used for the interment of the deceased from an adjacent institutional complex, unknown or unclaimed residents of Hudson County, and others. When the New Jersey Turnpike was constructed through the area in the early 1950s, the Turnpike Authority adjusted its construction methods in an attempt to minimize impacts to the burials, using a 190-foot-long bridge rather than an embankment to traverse the Snake Hill area. Burials to be impacted by the construction of the bridge abutments and three bridge piers were to be removed "and reburied in a 20x50-foot plot roughly 140 feet north-northeast of the then limits of the active burial ground" (LBG 2005: 2-1). Interment ceased in these cemeteries in 1962. The historic record does not provide the exact boundaries of the Historic Cemeteries of Hudson County, however, previous studies have created composite maps based on extensive archival research, which delineate those areas that may have been part of the cemeteries. These areas are shown in Figure 8-2.

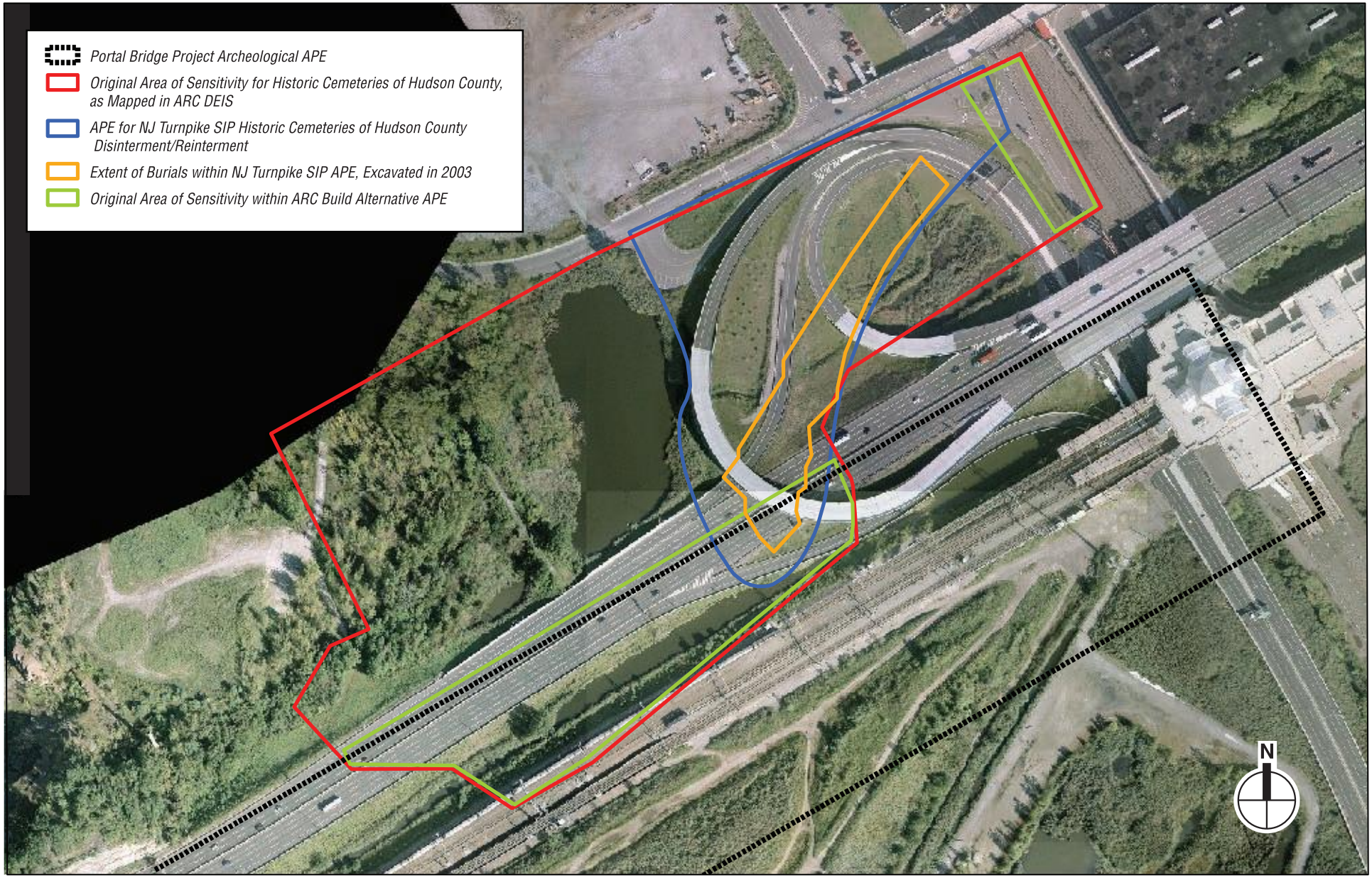
PROBABLE USE OF THE SECTION 4(f) PROPERTY

Section 4(f) regulations apply to archaeological sites (including those discovered during construction) if their value derives from their preservation in place, including the remains at the Historic Cemeteries of Hudson County. At this stage in the project, detailed plans for the extent of subsurface disturbance are not yet available and therefore the potential effects of the construction on the Historic Cemeteries of Hudson County area of archaeological sensitivity cannot be fully determined. Due to the limits of the available mapping, it is possible that as planned, the build alternatives would have no adverse effect and thus not result in a "use" of this resource. It is, however, assumed that construction of all build alternatives could adversely affect the Historic Cemeteries of Hudson County as the project would be located within the area of sensitivity for the burial ground. Therefore, for the purposes of this analysis, it is assumed that construction of any of the build alternatives would result in the "use" of this Section 4(f) resource.

Preferred Alternative DS

Alternative DS would entail the extension of Northeast Corridor Track 3 to the north off of the existing embankment into the area of sensitivity for the Historic Cemeteries of Hudson County. The construction of Track 4 and a connection between Track 3 and Track B would also require increasing the rail right-of-way in this area. As currently planned, the wider right-of-way would require a new retaining wall on the northern side of the corridor for about 80 feet in the area of archaeological sensitivity. The retaining wall would require below grade excavation and disturbance for the footings and support structure. While at this level of engineering there appears to be potential for disturbance, a better definition of the exact location of the Historic

1.3.08


Portal Bridge Project Archeological APE
Original Area of Sensitivity for Historic Cemeteries of Hudson County, as Mapped in ARC DEIS
APE for NJ Turnpike SIP Historic Cemeteries of Hudson County Disinterment/Reinterment
Extent of Burials within NJ Turnpike SIP APE, Excavated in 2003
Original Area of Sensitivity within ARC Build Alternative APE
N
0
200
400 FEET
SCALE

NJ TRANSIT
PORTAL BRIDGE CAPACITY
ENHANCEMENT PROJECT

Historic Cemeteries of Hudson County Sensitivity Map

Figure 8-2

Cemeteries of Hudson County as well as the need for a retaining wall will be determined during the preliminary engineering phase. Therefore, this alternative may require the use of this Section 4(f) property.

Alternative DE

Similar to the other build alternatives, it is assumed that construction of Alternative DE could adversely affect the Historic Cemeteries of Hudson County potentially located north of the Northeast Corridor adjacent to Secaucus Transfer Station possibly resulting in the use of this Section 4(f) property.

Alternative FE

Similar to the other build alternatives, it is assumed that construction of Alternative FE could adversely affect the Historic Cemeteries of Hudson County potentially located north of the Northeast Corridor adjacent to Secaucus Transfer Station and possibly result in the use of this Section 4(f) property.

Alternative FS

Similar to the other build alternatives, it is assumed that construction of Alternative FS could adversely affect the Historic Cemeteries of Hudson County potentially located north of the Northeast Corridor adjacent to Secaucus Transfer Station. This may result in the use of this Section 4(f) property.

AVOIDANCE ALTERNATIVES

There are two alternatives that would avoid below ground excavation in the area of sensitivity for the Historic Cemeteries of Hudson County and potentially avoid this use of this Section 4(f) property:

- Construct the tracks on embankment rather than retaining wall, thus eliminating underground excavation.
- Merge the proposed Track 3 alignment, the future Track 4 and the connection between Track 3 and B onto the existing alignment farther to the west, eliminating construction and excavation in the area of sensitivity.

Replace Retaining Wall with Embankment

Constructing Track 3 and the connecting track between Track 3 and Track A in this section on an embankment would be a feasible avoidance alternative. While this would avoid underground excavation and would allow the Section 4(f) resource to remain in place, construction of an embankment would entail additional filling of wetlands in this area. The embankment would also require compaction of earth to ensure stability which could potentially compress and disturb remains, constituting a use in itself. Therefore, this would not be a prudent avoidance alternative since the embankment may disturb the remains and result in additional wetland impacts beyond the required area.

Change Track Alignment of Track 3, 4 and B

Realigning the proposed alignments for proposed Track 4, Track 3 and the connecting track between Track 3 and Track B to the west of the area of sensitivity for the Historic Cemeteries of Hudson County could be a feasible avoidance alternative. Presently, the tracks have been

designed to allow for 90 mph rail operations to achieve maximum efficiency of the infrastructure and headways between trains. Once the exact location of any interments have been determined, a realignment of the proposed track alignment may be possible to maintain both the speed and eliminate the need for retaining walls in the area of sensitivity. At this time, it is unknown if a realignment would reduce the project's design speed in this area. The elimination of the trackbed for Track 4 would also minimize or eliminate the need for additional embankment or a retaining wall in the area of sensitivity.

MEASURES TO MINIMIZE HARM

As discussed above, at this stage in the project, detailed plans for the extent of subsurface disturbance are not yet available, and therefore the potential effects of the construction on the Historic Cemeteries of Hudson County area of archaeological sensitivity cannot be fully determined. As project plans continue through ongoing engineering, consultation will continue with the NJHPO regarding locations where human burials are possible. These future steps are set forth in the MOA executed by NJHPO, FRA, Amtrak, and NJ TRANSIT. Wherever possible, locations identified as possibly containing burials will be avoided. Where avoidance of the site is not possible, to avoid any insensitive disturbance to human remains, NJ TRANSIT and Amtrak will follow the procedures identified in the project's MOA concerning testing and excavation.

As set forth in the MOA, measures to be taken in areas where burials are possible include the following:

- The continuing work will consist first of outreach to and consultation with the descendent community prior to any archaeological testing or construction. This outreach is already under way, as discussed in more detail in Chapter 5.2, "Historic Resources," of the FEIS. Additional research will also be conducted to further define the filling and grading that have occurred at the potential grave-site locations in the areas that would be affected by project construction, as well as to document any additional information on interments, re-interments, and cemetery boundaries.
- If the additional research continues to indicate the potential presence of human remains, mitigation measures will be developed. These may include subsurface archaeological testing to locate these remains. Testing is typically designed to give a representative sampling of the presence or absence of archaeological resources, and sites are usually not tested in their entirety. However, the consultation with NJHPO may determine that burial sites should be tested thoroughly to conclusively determine presence or absence of human remains. In the locations of potential burials, the presence of a physical anthropologist/forensic archaeologist would be required during testing, so that any human remains that may be uncovered may be properly identified and treated.
- If the investigation shows that it is likely that the cemeteries or associated gravesites are still present in the right-of-way or construction area, and if human remains would be disturbed by construction of the Portal Bridge project, all efforts to modify the area of excavation would be undertaken to avoid impacts to these resources. If it proves to be impossible to avoid disturbing human remains, consultation with the NJHPO and descendant communities will define appropriate measures to take, including suitable cemeteries for reburial, should human remains be encountered during construction. Construction work in these areas would then be monitored by a physical anthropologist/forensic archaeologist so that burials could be identified during construction and handled appropriately.

In addition to these measures, the project's MOA sets forth measures to be followed should any unexpected burials be encountered during construction.

D. COORDINATION

FRA is serving as the federal lead agency for this project under the National Environmental Policy Act (NEPA). NJ TRANSIT and Amtrak are project sponsors. The Federal Transit Administration (FTA), U.S. Environmental Protection Agency (USEPA), and the U.S. Coast Guard (USCG) are cooperating agencies for this environmental review. The NHPA Section 106 consultation process for the Portal Bridge Capacity Enhancement Project began in December 2006. More than 30 parties were invited to participate in the Section 106 review process, and the first meeting was held on May 10, 2007 to discuss the project and the Area of Potential Effects (APEs). A second meeting was held on July 9, 2007 to present the potential effects of the project on cultural resources and to present preliminary plans and protocols to avoid, minimize, or mitigate these potential effects. A third meeting was held on November 27, 2007 when the effects determination pursuant to Section 106 of the NHPA was discussed. An MOA was distributed to the consulting parties with publication of the DEIS, and a 30-day comment period was established for their review. A fourth meeting for consulting parties was held on June 10, 2008 to present the preferred alternative and to answer questions and solicit comments on the MOA. An executed MOA is provided in Appendix B. The MOA provides for ongoing coordination among its signatories, including NJHPO, FRA, Amtrak, and NJ TRANSIT during the design and construction of the preferred alternative. This includes review of subsequent archaeology studies, construction protection plans, and design review. Furthermore, the MOA provides for a process to communicate project information with the Section 106 Consulting Parties as the design moves forward.

The FRA, through publication of the DEIS, also solicited U.S. Department of the Interior (DOI) review of the Section 4(f) Evaluation. On April 17, 2008, the DOI concurred that there is no prudent and feasible alternative to the proposed use of Section 4(f) properties including the Portal Bridge and portions of the Pennsylvania Railroad Historic District by each of the build alternatives.

E. REFERENCES

Louis Berger Group [LBG] 2005 Potter's Field Disinterment/Reinterment; Secaucus Interchange Project; Secaucus New Jersey; Technical Report. For: New Jersey Turnpike Authority, Woodbridge, New Jersey. ✷

A. INTRODUCTION

This chapter includes an evaluation of the proposed project alternatives, including the No Action Alternative, and identifies a preferred alternative for the Portal Bridge Capacity Enhancement Project. In selecting a preferred alternative, the four build alternatives and the No Action Alternative were compared and their ability to meet the project goals and objectives that were identified in Chapter 2, "Project Purpose and Need" was assessed. This was followed by a detailed analysis of constructability and project schedules that were prepared for the FEIS. Finally, the environmental impacts of the alternatives were considered and the project costs for each build alternative were compared.

B. PROJECT GOALS AND OBJECTIVES

Six goals were established for the Portal Bridge Capacity Enhancement Project relating to capacity, reliability, safety, compatibility, cost-effectiveness, and environmental considerations. The objectives further define the goals and provide specific and measurable means by which to evaluate project alternatives. The six project goals and their respective objectives are as follows:

GOAL 1: Enhance capacity to meet current and future demand—including new service—along the Northeast Corridor.

- Reduce the total number of locations between Swift and Allied Interlockings where trains must merge;
- Provide sufficient capacity to maintain adequate passenger rail service, prevent future overcrowding, and accommodate emerging markets for commuter and intercity rail passenger service;
- Prevent future overcrowding of passenger rail trains.

GOAL 2: Improve service reliability and operational flexibility.

- Upgrade the nearly century-old moveable bridge to a state-of-good-repair or replace the structure;
- Reduce the vulnerability of the existing capacity-constrained rail infrastructure to unexpected train delays, including weather-related incidents, breakdowns, and unusual travel demand.

GOAL 3: Provide a redundant Hackensack River crossing to facilitate maintenance and enhance passenger safety and security.

- Construct additional tracks to allow for continued rail operations during off-peak maintenance periods;

[1] This chapter is new to the FEIS.

- Provide a secondary crossing to enable continued rail operations in the event of an unplanned closure.

GOAL 4: Minimize conflicts with maritime traffic.

- Avoid or minimize disruptions to marine traffic during construction, while maintaining uninterrupted service to rail traffic;
- Minimize delays to trains or marine vessels due to bridge operations;
- Provide sufficient vertical and horizontal clearance for larger marine vessels.

GOAL 5: Optimize existing infrastructure and planned improvements.

- Ensure project alternatives do not preclude completion of planned projects, including the proposed ARC project.

GOAL 6: Minimize impacts on the surrounding environment.

- Minimize impacts to wetlands and other ecologically sensitive areas;
- Minimize impacts to cultural resources;
- Minimize short-term construction impacts to the environment.

GOAL 1: ENHANCE CAPACITY TO MEET CURRENT AND FUTURE DEMAND—INCLUDING NEW SERVICE—ALONG THE NORTHEAST CORRIDOR.

The No Action Alternative would provide none of the capacity improvements of the build alternatives and would fail to meet any of the three objectives under Goal 1. All four build alternatives would fully meet this goal by increasing the capacity over the Hackensack River from two to five tracks. Three of the tracks would be on a fixed bridge that would not be subject to any bridge openings. The other two tracks would be on a moveable bridge, 40 feet above mean-high-water (MHW) that would open occasionally. All build alternatives would include additional tracks between Swift Interlocking and Secaucus Transfer Station to remove the bottleneck in this area of the Northeast Corridor. In addition, all build alternatives would include a grade-separated crossing of the Northeast Corridor for trains travelling from the southern bridge to the westbound Kearny Junction connecting track and onto the existing Morris & Essex (M&E) Line. All four build alternatives would meet this goal. From an operational perspective, however, the duck-under alternatives (Alternatives DE and DS) would be preferred. The duck-under alternatives offer a better vertical profile and train braking distances.

GOAL 2: IMPROVE SERVICE RELIABILITY AND OPERATIONAL FLEXIBILITY.

While the No Action Alternative would bring the existing structure to a state of good repair, it would still be vulnerable to reliability issues and would not provide operational flexibility over the long-term. The bridge would still be subjected to the reliability issues of a nearly 100-year-old bridge and the operational inflexibility of a 23 foot clearance over a navigable channel. These issues would continue to adversely affect marine and rail traffic at this critical crossing. All of the build alternatives would meet the first objective by removing the existing Portal Bridge. Similarly, they would all meet the second objective by constructing a new fixed bridge 50 feet above MHW and a new moveable lift bridge 40 feet above MHW. The Northeast Corridor would no longer be vulnerable to capacity constraints and congestion from the reliability issues associated with the nearly century-old moveable swing bridge 23 feet above MHW. This type of moveable bridge is generally regarded as obsolete for heavily-trafficked rail lines. This is primarily due to its inherently slow rate of opening and closing (which does not

lend itself to remedy short of replacing the bridge) and depending upon the age of the span and the stability of the site, the reliability of the locking mechanism.

GOAL 3: PROVIDE A REDUNDANT HACKENSACK RIVER CROSSING TO FACILITATE MAINTENANCE AND ENHANCE PASSENGER SAFETY AND SECURITY.

All of the build alternatives would provide additional tracks and a second crossing of the Hackensack River, which would fully meet the two objectives of this goal. All build alternatives would provide the same configuration for this crossing and there would be no difference among the build alternatives with respect to this goal. However, the No Action Alternative would meet neither objective and therefore would fail to meet this goal.

GOAL 4: MINIMIZE CONFLICTS WITH MARITIME TRAFFIC.

All build alternatives would provide the same structures across the Hackensack River—a three-track fixed bridge, 50 feet above MHW and north of the existing alignment, and a two-track moveable bridge, 40 feet above MHW and either on or south of the existing alignment. These clearances above MHW were selected in conjunction with the United States Coast Guard (USCG) to reduce the conflicts between marine and rail traffic and to minimize delays to both river and rail traffic. Based on an analysis of marine traffic from 2004 to 2006, 96 percent of the vessels would be able to pass beneath the moveable bridge without requiring an opening. The number of required openings for marine traffic would decrease from over 300 per year to less than 15 per year. Since the clearances above MHW are the same in the four build alternatives, they would all meet this goal to the same degree.

From April 2004 to April 2006, there were over 600 conflicts between marine and rail users related to the existing Portal Bridge. Under the No Action Alternative, there would be no reduction in the number of these conflicts. Furthermore, it is expected that delays to both rail and marine traffic would increase in the future as the operational reliability of the current moveable swing bridge decreases. Therefore, the No Action Alternative would not meet this project goal.

GOAL 5: OPTIMIZE EXISTING INFRASTRUCTURE AND PLANNED IMPROVEMENTS.

All build alternatives would connect to the existing Secaucus Transfer Station, the Kearny Junction connection tracks leading to the M&E Line and the Northeast Corridor at Swift Interlocking. All build alternatives could provide connectivity to the proposed ARC tracks by extending Tracks 5 and 6 from the southern bridge to the south side of Secaucus Transfer Station. All build alternatives could accommodate turnouts from Track 6 for a possible future connection to lead tracks that would connect with the proposed Kearny Yard via the Diamond Shamrock and Standard Chlorine properties. The No Action Alternative would not provide infrastructure for future connections to the ARC project.

GOAL 6: MINIMIZE IMPACTS ON THE SURROUNDING ENVIRONMENT

The No Action Alternative would not result in any short-term construction-related impacts to the environment that would result from implementation of the build alternatives. However, it would not provide any of the long-term environmental benefits accruing from the build alternatives' positive effect on rail operations and its secondary beneficial effects on environmental issues

such as regional mobility, traffic congestion, and air quality. Therefore, over the long term the No Action Alternative would not meet this project goal.

Generally, the environmental benefits accruing from the build alternatives' improvements to the rail infrastructure of the Northeast Corridor would be the same for all alternatives. However, there are substantial differences in potential adverse impacts depending upon the alternative. Most of the differences can be attributed to whether the southern bridge is on the existing alignment or south of the existing right-of-way. There are also some differences in environmental effects between the methods for grade separation (i.e., fly-over versus duck-under of Track 5 with respect to the Northeast Corridor). All build alternatives would result in adverse effects to parklands, cultural resources, contaminated materials, and ecological resources. The build alternatives would also require the acquisition of a number or properties, including two with operating businesses on-site.

PARKLANDS

All build alternatives would require the acquisition and use of two acres of the recently expanded Laurel Hill Park, which is owned by Hudson County. The use of the parkland is required for the approach to the northern bridge on the east bank of the Hackensack River. As described in the Section 4(f) Evaluation (see Chapter 8 of this EIS), there is no prudent and feasible alternative to the use of this land. Since all build alternatives require a fixed northern bridge, as discussed in the Section 4(f) Evaluation, none of the build alternatives could avoid the use of this land. Consideration of effects to Laurel Hill Park under Section 4(f) would not influence the selection of a preferred alternative.

CULTURAL RESOURCES

All alternatives would require the demolition and removal of the existing Portal Bridge, a national-eligible and state-listed historic structure, which would constitute an adverse effect under Section 106 of the NHPA and a "use" of a Section 4(f) resource. Similarly, all build alternatives would result in an adverse effect on the Pennsylvania Railroad Historic District by contributing to the continued alteration of its fabric and appearance. Finally, all build alternatives may disturb portions of the Historic Cemeteries of Hudson County that are sensitive for human remains and funerary archaeological artifacts. Similar to the discussion above regarding parkland, the adverse effects on cultural resources would not affect the selection of a preferred alternative since all build alternatives would have the same adverse effects and incorporate the same mitigation and measures to minimize harm for these resources.

PROPERTY ACQUISITION

Alternatives FS and DS would require the most property acquisition (45.4 acres and 41 acres, respectively) since the southern bridge and its approaches would be located south of the existing alignment. These alternatives would require acquisition of over 12 acres on the Diamond Shamrock property west of the Hackensack River and nearly 5 acres in the Riverbend Wetland Preserve east of the Hackensack River. The acquisition of these parcels would not be required for either Alternative DE or FE. Alternative DE would require the least amount of property acquisition (24.2 acres), followed by Alternative FE (29.2 acres). The fly-over alternatives (Alternatives FE and FS) would require more land than their respective duck-under counterparts (Alternatives DE and DS). The additional land requirements for the fly-over alternatives would

include a larger portion of Landfill 1-A than the duck-under alternatives. A small portion of land in Cedar Creek Marsh would also be required with Alternatives FE and FS.

All alternatives would require acquisition of the Jana Corporation site and relocation of Royale Linens, an operating business located within the 11-acre parcel. All alternatives would also require acquisition of the 4-acre parcel that is presently occupied by the Professional Environmental Services Corporation. While Alternatives DS and FS would require more property acquisition than Alternatives DE and FE, the adverse impacts on existing businesses would be the same for all alternatives.

ECOLOGICAL RESOURCES

In the DEIS, it was estimated that the potential acreage of wetlands impacted by the project would range from a minimum of 8.4 with Alternative DE to 13.1 with Alternative FS. Alternatives FE and DS would impact 9.1 and 12.3 acres, respectively. Between the DEIS and the FEIS, as discussed in Chapter 5.6, "Ecology," the wetland impacts have been refined in several respects as follows:

- The fill in the wetlands on the east bank of the Hackensack River for the approach structures has been revised to account for the actual pier design that will be used to support the these elevated structures. In the DEIS, it was conservatively assumed that the footprint of the entire track structure would constitute a fill for the purposes of determining impacts on adjacent wetlands. The revised analysis only accounts for the actual area of wetland to be filled due to the placement of piers to support the elevated structure.
- The shading estimates were also refined by taking into account the width of the proposed structure and its height above the surface (ground or water) to more accurately depict these impacts.
- The permanent access road for the southern bridge in Alternatives DS and FS was moved from the Riverbend Wetland Preserve to the existing Northeast Corridor embankment resulting in a reduction in impacts for these alternatives. A temporary access road/construction platform would still be required in the preserve to allow construction of the elevated structure.
- The embankment for Alternatives DE and FE on the east side of the Hackensack River was widened to allow a new permanent access road to be constructed in lieu of the road that would be lost from increasing the elevation of the current embankment. This resulted in a slight increase in wetland impacts for these alternatives.

As shown in Table 9-1, the overall result of these changes was a substantial reduction in the proposed project's impact on wetlands. The open water and benthic habitat impacts remain essentially unchanged since the DEIS and are similar for all build alternatives. The impact assessment on wetlands, open water and benthic habitat and shading effects, which was shown in Table 5.6-5 (in Chapter 5.6, "Ecology") by individual section, is summarized below.

As shown in Table 9-1, the difference in permanent impacts to wetlands from the placement of fill between Alternatives DS and DE is now estimated to be approximately 0.3 acres, as compared to the 3.9 acres shown in the DEIS. Most of the change has occurred in the area of the Riverbend Wetland Preserve on the east side of the Hackensack River and south of the existing Northeast Corridor right-of-way. As described above, the two major issues contributing to that reduction in impacts are the relocation of the permanent access road and the use of elevated structure within the preserve.

Table 9-1
Permanent Ecological Effects (in acres) by Alternative

Type	DS	DE	FE	FS
Wetlands	5.7	5.4	6.1	6.4
Benthic Habitat	0.1	0.1	0.1	0.1
Open Water	0.8	0.8	0.8	0.8
Shading	2.0	1.5	1.5	1.9

Note: Shading impacts occur when the height of the structure above MHW is less than 0.7 of the width of the structure. Temporary impacts would be in addition to those shown above.

The shading impacts have also been revised for the FEIS. In some areas, the potential impacts from shading have increased while in others they have been reduced. For the higher structures, such as the two main crossings of the Hackensack River, it has been determined that there would be no impacts due to shading. On the east bank of the Hackensack River, potential shading impacts are now being considered where the height above the ground surface is less than 70 percent of the width of the structure. Therefore, a portion of the approach viaducts that were conservatively assumed to constitute a "fill" in the DEIS are now more accurately considered shading impacts in the FEIS. The overall potential adverse impacts from shading of open water and wetland areas have been substantially reduced.

In terms of short-term construction phase impacts, all build alternatives would result in similar impacts with an approximately 0.6-acre difference between Alternatives DS and DE. All build alternatives would require temporary access roads and construction platforms in the same locations including Cedar Creek Marsh, Kearny Brackish Marsh, the Hackensack River, the Riverbend Wetland Preserve and the portion of the newly expanded Laurel Hill Park north of the existing right-of-way.

CONTAMINATED MATERIALS

There are a number of sites with hazardous and/or contaminated material concerns in the project study area that could be potentially affected by construction of the build alternatives. The sites that would be most affected by the build alternatives include: Landfill 1-A, Jana Corporation, Diamond Shamrock, Malanka Landfill, several chromite ore processing residue sites, and sediments in the Hackensack River. The potential impacts on the Jana Corporation property and some of the chromite ore processing residue sites would be same for all build alternatives and would be a result of construction of the approach to the northern bridge.

Potential impacts within the Hackensack River would also be the same for all build alternatives, since four piers (two for each bridge) would be constructed within the river. The removal of the existing Portal Bridge and the potential for disturbance to sediments (related to the removal of the existing bridge's substructure) would be the same for all build alternatives. With respect to the Malanka Landfill, all build alternatives would most likely result in a small disturbance on this property, as it relates to the subsurface work required for the foundations supporting the east side of the bridges carrying Tracks 5 and 6 over the Boonton Line.

Alternatives FS and FE would result in a greater property impact and disturbance to Landfill 1-A than Alternatives DS and DE, due to the increase right-of-way requirements for the Track 5 fly-over. In all cases, any disturbance to the landfill would require careful coordination in the design and construction phases of the project to avoid any adverse environmental effects.

The only substantial difference among the build alternatives with respect to contaminated materials is that Alternatives FS and DS would require construction within a portion of the Diamond Shamrock property while Alternatives FE and DE would not. The required work would include subsurface disturbance and excavation for foundation work related to bridge abutments and piers. It is likely that a portion of the Diamond Shamrock property may be required for construction staging or access under any build alternative.

In evaluating each alternatives performance with respect to contaminated materials, it should be noted that the effects of construction within these areas could be both beneficial as well as adverse. The adverse effects would be related to the potential for release of materials which could impact public health or the environment and their impact on project construction cost and schedule. In terms of benefits, construction within these sites provides an opportunity for long-term positive effects by remediating some, if not all, of the contamination present. Therefore, while Alternatives FS and DS may have greater potential for short-term impacts, they would result in a greater long-term benefit with respect to contaminated materials by contributing to the remediation of additional contaminated sites and/or accelerating the schedule of planned remedial activities.

C. CONSTRUCTION SCHEDULE

As discussed in Chapter 6, "Construction Impacts," the construction schedule for two possible construction sequencing scenarios (sequential and concurrent) have been refined for the FEIS. The sequential scenario represents Alternative DE while the concurrent scenario represents Alternative DS. The construction schedules for the Alternatives FE and FS would have similar phasing but would last several months longer than their counterparts. While there would be some difference in construction staging and scheduling for the fly-over, the major factor in determining the overall construction duration is whether the main river spans and their approach structures are constructed sequentially or concurrently.

Based on the current schedule for preliminary engineering, right-of-way acquisition, permitting and final design, it is expected that construction of any alternative would not begin until the end of 2011. Furthermore, as discussed in Chapter 6, construction of any build alternative would involve additional complexity due to the constraints of working within and adjacent to an operating railroad. Therefore, the construction duration of all build alternatives has been increased from that shown in the DEIS.

Construction of Alternatives DS and FS, where construction of the two Hackensack River bridges could be constructed concurrently, would take approximately 66 months and revenue service would commence in June 2017. Alternatives DE and FE, which would require sequential construction of the two main river crossings, would take approximately 94 months to construct and revenue service would commence in October of 2019. Due to the constraints of working within and adjacent to the nation's busiest passenger railroad, sequential construction of the two Hackensack River spans and their respective approach structures would increase the construction period by 28 months. This difference in construction duration would have the following adverse effects:

- As discussed below, it would increase the cost of constructing Alternative DE (and Alternative FE) due to the increase in finance charges over the construction period.

- It would extend by two and one-half years the length of time that construction-related impacts would occur in the adjacent wetlands and open water thereby increasing the potential for adverse effects on water quality and aquatic resources.
- The existing terrestrial and avian wildlife resources in the area would be subject to an additional 28 months of disturbance, including construction-related noise and light.
- It would extend by two and one-half years the potential adverse effects on rail operations and passenger inconvenience, particularly in the off-peak periods that may result from construction of the project.
- It would require an additional year of construction in the Hackensack River and its related effects on marine navigation.
- It would delay the initiation of revenue service on the new bridges from 2017 to 2019 as demand for this service continues to increase.

D. PROJECT COST

Table 9-2 shows the project cost for each alternative in 2008 dollars.

Table 9-2
Capital Cost—Build Alternatives (in Millions)

Cost	DS	DE	FE	FS
Guideway	$551	$503	$515	$549
Track	$26	$25	$26	$27
Site/Civil	$152	$150	$160	$159
Systems	$66	$63	$65	$68
Right-of-Way Costs	$15	$7	$13	$16
Soft Costs	$317	$295	$303	$319
Unallocated Contingency	$159	$148	$153	$160
Finance Charges	$58	$52	$55	$58
Total	**$1,344**	**$1,243**	**$1,290**	**$1,356**

Note: All costs in 2008 dollars. Guideway includes all track support structures including bridges, abutments and foundations but not embankment which is included in Site/Civil. Site/Civil includes transport and disposal of contaminated materials and wetland mitigation. Soft costs include engineering, project and construction management, insurance, legal and force account labor.

As shown, the costs in 2008 dollars range from approximately $1.243 billion for Alternative DE to $1.356 billion for Alternative FS. Generally, the differences are the result of (1) the increased structural cost for the southern alignment alternatives to span the wetland areas of the Riverbend Wetland Preserve and (2) the costs associated with acquiring the additional land outside of the Amtrak right-of-way. The fly-over alternatives are more costly than their duck-under counterparts due to the additional elevated structures required and a small amount of additional property acquisition. As a result, Alternative FS is the most expensive alternative.

As discussed above and previously in Chapter 6, “Construction Impacts,” the construction schedules for the build alternatives have been updated for the FEIS. Because of the difference in construction duration between Alternatives DS and FS and Alternatives DE and FE, the actual project costs should reflect the time value of money. Therefore, the difference in construction cost for the southern alignment alternatives would be less than that shown in the above table. For

example, the difference in construction cost in 2008 dollars between Alternatives DS and DE is $101 million. However, the difference after escalating costs using the current construction schedule would be $52 million. Therefore, the additional 28 months of construction would increase the cost of Alternative DE in relation to Alternative DS by $49 million when funds are actually expended.

E. SELECTION OF PREFERRED ALTERNATIVE

Since the build alternatives were developed in consideration of the above project goals and objectives, the differences among alternatives with respect to these goals and objectives are relatively minor. All four build alternatives would fully satisfy the first five goals described above. While there are some operational and engineering benefits to the duck-under as compared to the fly-over option, either group of alternatives would meet the stated goals relating to the operational, reliability, and capacity problems associated with the current rail infrastructure. Therefore, the selection of a preferred alternative is a function of three issues—environmental effects, construction cost, and schedule.

There is no apparent benefit to selecting Alternative FS or FE over their respective duck-under counterparts (Alternatives DS or DE). The duck-under alternatives are cheaper, operationally superior (due to a material difference in grade on Track 5 and related braking distances) and require less right-of-way. Therefore, the selection of the preferred alternative becomes a choice between Alternatives DS and DE. These two alternatives were compared with respect to the three issues identified above: project cost; construction duration and risk; and environmental impacts.

In terms of project cost, when the year of expenditure and the time value of money are considered, the difference between the Alternatives DE and DS would be approximately $52 million or about 3 percent of the inflated cost. With the refinements in design and analysis between the DEIS and the FEIS, the differences in adverse environmental effects has also been substantially reduced. With respect to adverse environmental effects, the major difference among the alternatives was their potential to result in impacts to ecological resources, particularly *Phragmites*-dominated coastal wetlands. While the difference in the amount of wetlands to be filled by Alternatives DS and DE was nearly four acres in the DEIS, the refined design has reduced the difference to 0.3 acres. The difference in shading impacts is less than 0.5 acres.

The most substantial difference among the duck-under Alternatives DS and DE is the construction duration and the potential adverse effects related to prolonging the construction period. In addition to the effects on construction cost described above, the additional time required to complete Alternative DE would result in adverse effects for a longer period of time on a number of environmental concerns. The difference in construction duration would prolong the number of seasons that terrestrial and aquatic resources would be subject to the temporary effects of project construction, including intrusions from construction noise. This would also increase the length of time that short-term effects to water quality from various construction activities would occur including an additional year for work in the Hackensack River. This longer construction duration (an approximate 40 percent increase) would increase the potential for indirect or secondary effects on the ecological resources of the Meadowlands since the direct effects would be occurring for that much longer.

The additional 28 months of construction would also potentially result in greater adverse effects on NJ TRANSIT and Amtrak passengers by increasing the time that they may experience

disruptions to service or inconvenience. As discussed in Chapter 6, the number of weekday evening and nighttime scheduled train movements has increased dramatically over the past several years and is expected to further increase in the future. The relentless increase in the demand for surface transportation along the Northeast Corridor makes it increasingly difficult to identify productive work "windows" on the existing rail line, even at night. Shorter work "windows" are inherently less efficient because setup and clear-up times are constant; therefore, it takes longer to accomplish the same productive work. As the project construction period is increased the availability of potential work "windows" will decrease further exacerbating the potential adverse effects on the riding public and the environment.

Finally, Alternative DS would enable revenue service for NJ TRANSIT and Amtrak 28 months earlier than Alternative DE. This new infrastructure would improve rail operations and eliminate much of the cause for delays and reliability issues in this portion of the Northeast Corridor. After careful consideration and evaluation, the project sponsors have identified Alternative DS as the preferred alternative for the Portal Bridge Capacity Enhancement Project. The FRA concurs in the selection of a preferred alternative. ✷

Chapter 10: Public Participation and Agency Coordination

A. INTRODUCTION

This chapter presents a summary of the process used to encourage public and agency participation for the Portal Bridge Capacity Enhancement Project environmental review. In accordance with the National Environmental Policy Act of 1969 (NEPA) and its implementing regulations from the Council on Environmental Quality (CEQ), it is vital that those who are interested in, or potentially affected by this study have an opportunity to share their concerns and provide input regarding the project. FRA and NJ TRANSIT have developed a Public Involvement and Agency Coordination Plan (the Plan) that includes outreach to commuters, the general public, property owners, local businesses, various associations, stakeholders, and affected government agencies to effectively engage the public and agencies in the planning and impact assessment processes.

PUBLIC INVOLVEMENT AND AGENCY COORDINATION PLAN

The Plan has been designed to engage a diverse group of public participants in order to provide timely information and solicit relevant input throughout the environmental review process. The public participation process is one that requires extensive and intensive outreach to private citizens, local businesses and associations, development authorities, property owners, elected officials, affected government agencies and others in the New York-New Jersey metropolitan area. In order to best accomplish this, the following goals were established at the initiation of the program:

- To provide an opportunity and a mechanism for a diverse group of public participants to engage in the development of the EIS and give relevant input to the project.
- To focus public input in a structured manner that will allow decisions to be made with the maximum benefit from public involvement, and to ensure that public input influences recommendations and decisions.
- To ensure that elected officials, agencies, stakeholders, and the general public are adequately informed about the project and its implications for their communities, and to identify potential issues so that they can be addressed and resolved before the completion of the EIS process.
- To solicit community feedback for the Scoping Document—including the alternatives to be evaluated, environmental issues to be analyzed, and the analysis methodologies—as well as comments on the Draft EIS (DEIS).
- To convey NJ TRANSIT, Amtrak, the FRA, and the study team's commitment to public involvement and become the primary source of project information.
- To build consensus on a preferred alternative by balancing points of view among regional/local interests and environmental/commercial concerns and define and build support for the preferred alternative.

Achieving these goals will require fulfillment of the following objectives:

- Establish ongoing, inclusive, and meaningful two-way communication with stakeholders and the public.
- Develop a wide, inclusive communications net to engage a broad base of constituencies.
- Provide forums and venues where constituents can easily participate in the process; and enable constituents to track how their input is integrated into the decision-making process.
- Target outreach to key stakeholders at critical points in the planning process.
- Educate the public about the environmental review process and the role of government, stakeholders, and the general public.
- Clarify the role of this project relative to the Access to the Region's Core (ARC) Project, while at the same time coordinate outreach activities with those efforts in order to best utilize the public's involvement.
- Coordinate outreach efforts with Amtrak and NJ TRANSIT's internal protocols and policies so as to ensure timely and relevant communications.
- Evaluate the effectiveness of outreach activities on a continual basis in order to flexibly utilize the most effective techniques throughout this project.

AGENCY AND PUBLIC INVOLVEMENT ACTIVITIES

To initiate the Plan for this project, FRA and NJ TRANSIT hosted agency and public scoping meetings in January 2007 to solicit comments on the purpose and need for the proposed Portal Bridge Capacity Enhancement Project, the types of project alternatives to be considered, and the technical evaluations to be undertaken, as well as to receive input on the issues and concerns that should be addressed in the DEIS. Additionally, two committees were formed: the Technical Advisory Committee (TAC) comprising agency and government representatives, while the Regional Citizens' Liaison Committee (RCLC) comprises members of the general public, interest groups, and associations. Meetings of both committees were held at key stages during the EIS process. Summaries of these meetings are included below. Beyond the scoping and committee meetings, a number of meetings were held on a topic-specific basis as warranted.

SCOPING MEETINGS

AGENCY SCOPING MEETING

On January 9, 2007, 16 individuals representing 13 agencies participated in the agency scoping meeting held at NJ TRANSIT headquarters in Newark, New Jersey. A total of 25 agencies had been invited to attend the meeting. Participants included federal, state, regional, and local agencies. Seven representatives made oral comments at the meeting. Written comment sheets, letters, e-mails, and memos resulted in a total of 12 agency comments received during the Scoping Process.

PUBLIC SCOPING MEETING

On January 17, 2007, FRA and NJ TRANSIT hosted a public scoping meeting from 4–8 PM at the Newark Public Library. Attendees discussed the proposed project and their concerns with members of the project team informally at an open house, heard a presentation by the project

team, and then provided formal oral comments. The presentation outlined the purpose and need for the project, the project goals, the environmental review process, and public involvement opportunities. It also included descriptions of the study areas, potential environmental issues, and preliminary project alternatives.

A total of 38 individuals attended the public scoping meeting, with 8 attendees making statements for the formal record. The public comment period remained open for 45 days, closing on January 31, 2007. Written comment sheets, letters, e-mails, and memos resulted in a total of 22 individual comments received during the scoping period.

Combined with the scoping meeting was a public open house. This open house encouraged interaction among the public attendees and the study team. At the open house, information was available on boards for informal discussion purposes. In addition to the open house, the public also had access to the Draft Scoping Document, copies of the presentation, the first newsletter for the project, and comment sheets to submit comments to the study team.

SCOPING PROCESS COMMENTS

The Scoping Process generated numerous comments, questions, and suggestions regarding the proposed Portal Bridge Capacity Enhancement Project, all of which have been addressed in some fashion as part of the EIS process. The major themes raised during the Scoping Process were:

- **Purpose and Need** comments predominantly agreed with the necessity of the project.
- **Process** comments sought clarification on the role of the project's TAC and RCLC committees and inquired about the negotiation process with the U.S. Coast Guard (USCG) in determining bridge heights.
- **Groups of Alternatives** comments focused on what should be done with the existing bridge.
- **Operations and Infrastructure** remarks addressed allowable bridge heights, types of bridges to be considered and the necessary number of tracks.
- **Environmental Issues** focused on wetlands mitigation and the need to coordinate analysis with the ARC project.
- **Relationship to the ARC project** comments sought clarification as to the separation of the two projects and included recommendations for coordination and consistency efforts between the two projects.

The project team recorded all the comments and drafted responses to them. The responses were collated into the document *Scoping Comments Summary*, which was made available on the project's Web site (www.portalbridgenec.com) in May 2007. Shortly after posting the document on the Web site, TAC members were notified via email, while attendees at any RCLC meeting were notified via e-mail and regular mail of the availability of the document.

COMMITTEES

Community and government agency input play an important role in this project as it progresses. Amtrak and NJ TRANSIT have organized two committees—the TAC and RCLC—to solicit input on the project. These committees met several times during the preparation of the DEIS.

TECHNICAL ADVISORY COMMITTEE (TAC)

The TAC comprises federal, state, regional, and local agencies to provide technical guidance on traffic/transportation and environmental/historic resource analyses. Membership includes:

- U.S. Environmental Protection Agency (USEPA)
- Federal Transit Administration (FTA)
- New Jersey Department of Environmental Protection (NJDEP)
- New Jersey Department of Transportation (NJDOT)
- New Jersey Turnpike Authority (NJTA)
- North Jersey Transportation Planning Authority (NJTPA)
- Port Authority of New York and New Jersey (PANYNJ)
- New Jersey Meadowlands Commission (NJMC)
- New Jersey Historic Preservation Office (NJHPO)
- U.S. Coast Guard (USCG)
- U.S. Fish and Wildlife Service (FWS)
- Town of Secaucus
- Hudson County Engineering

The kick-off meeting of the TAC took place on January 9, 2007 at the NJ TRANSIT headquarters in Newark, New Jersey, with 16 attendees representing 13 agencies. This meeting not only served as the first TAC meeting but also served as the agency scoping meeting to review the NEPA Scoping Document for the Portal Bridge Capacity Enhancement Project.

On April 26, 2007, the second TAC meeting was held at the NJTPA offices in Newark, New Jersey, with 13 attendees representing 10 agencies. At this meeting, the project team presented information on the project elements, environmental considerations, the Section 106 process, and a summary of the scoping comments. They also presented the alternatives screening process, a brief review of the alternatives to be considered, the evaluation methodology, and the status of the comparative screening analysis. After this meeting, all subsequent meetings of the TAC served as the Section 106 consulting parties meetings as detailed below in the Section 106 section of this chapter.

On July 9, 2007, the third TAC meeting was held at NJ TRANSIT headquarters in Newark, New Jersey, where the results of the alternatives screening analysis were presented. Ten attendees representing 9 agencies were present. At this meeting, the project team made a presentation reviewing the alternative screening process and revealing the alternatives that will be analyzed in depth in the DEIS. At this meeting, the project team also displayed large scale plans and profiles of each of the alternatives to be analyzed in the DEIS.

On November 27, 2007, the fourth TAC meeting was held at the NJTPA offices in Newark, New Jersey, where the team presented the conclusions of the preliminary DEIS. Seven attendees representing 6 agencies were present. At this meeting, the project team made a presentation reviewing the alternatives and their potential impacts. The project team held a final TAC meeting on June 10, 2008 to review the comments received during the DEIS comment period, present the project's preferred alternative, and provide updates to the DEIS that are included in the FEIS.

REGIONAL CITIZENS' LIAISON COMMITTEE (RCLC)

The RCLC comprises representatives from a cross-section of interests and organizations that could potentially be affected by the proposed Portal Bridge Capacity Enhancement Project. This committee provides input via open discussion about project issues and findings and provides a venue for participants to express the perspectives of their member organizations. It is open to all who wish to join. Over 60 organizations were initially invited to participate, and membership includes:

- New Jersey Society of Architects (AIA NJ)
- East Coast Greenway
- Jersey City Department of Housing, Economic Development and Commerce
- Jersey City Landmarks Conservancy
- Lackawanna Coalition
- Meadowlands Chamber of Commerce
- Newark Department of Engineering
- New Jersey Association of Rail Passengers (NJARP)
- Regional Rail Working Group (RRWG)
- Township of Irvington
- Concerned members of the public and engineering community

The RCLC held its first meeting on February 13, 2007, at the Newark Public Library with 9 attendees representing 8 organizations. This meeting included a presentation on the results of the public Scoping Process and the initial screening of alternatives.

On April 26, 2007, the second RCLC meeting was held at NJ TRANSIT headquarters in Newark, New Jersey to review the project elements, the alternatives screening methodology, the status of the comparative screening analysis, operational considerations, and the Section 106 process. The meeting was attended by 10 stakeholders representing 8 organizations.

On July 9, 2007, the third RCLC meeting was held at NJ TRANSIT headquarters in Newark, New Jersey. The meeting was attended by 16 stakeholders representing 12 organizations. At the meeting the project team made a similar presentation to one that was made earlier in the day at the TAC meeting reviewing the results of the alternatives analysis. Copies of the presentation were sent—prior to the July 9th meeting—to any RCLC member who had previously attended an RCLC meeting for the project.

On November 27, 2007, the fourth RCLC meeting was held at NJTPA headquarters in Newark, New Jersey. The meeting was attended by 13 stakeholders representing 9 organizations. At the meeting the project team made a similar presentation to one that was made earlier in the day at the TAC meeting reviewing the results of the alternatives analysis. The project team held a final RCLC meeting on June 10, 2008 to review the comments received during the DEIS comment period, present the project's preferred alternative, and provide updates to the DEIS that are included in the FEIS.

INFORMATIONAL MATERIALS

WEB SITE

At the start of the Scoping Process, NJ TRANSIT launched a Web site dedicated to the project at www.portalbridgenec.com. The site is updated throughout the project's duration, making available to the public information about meeting opportunities, copies of meeting presentations, maps and charts, as well as newsletters.

NEWSLETTERS

Newsletters are published at milestones throughout the study and disseminated to the entire project mailing list as well as to libraries and community centers in the study area. The project mailing list consists of over 600 individuals. The first newsletter was sent out in January 2007 and provided an overview of the project, the agencies involved, a project timeline, and advertised information about the public scoping meeting. The second letter was sent in February 2008 and publicized the availability of the DEIS for public comment, advertised the information about the DEIS public hearing, presented the alternatives in the DEIS, provided an update about the public involvement process, and introduced preliminary environmental impact analysis.

MEETING PUBLICITY

The public scoping meeting and open houses were publicized through meeting flyers mailed to the entire project mailing list, as well as to local libraries and community centers to be publicly posted. The DEIS hearing and open houses were publicized through the second project newsletter which was mailed to the entire project mailing list, as well as to local libraries and community centers to be publicly posted. A postcard was sent to the entire project mailing list to publicize the availability of the DEIS for public comment. Meeting information was also posted on the project Web site and on the community calendars of several on-line newsletters such as the *Tri-State Transportation Campaign's Mobilizing the Region, NJTPA Communiqué, Waterwire News, Spotlight on the Region (RPA)* and *NYMTC Notes.* Paid notices were placed in local and regional newspapers, both in English and Spanish, in New York and New Jersey for the public scoping meetings, the DEIS hearings, and their respective open houses. These newspapers included: *The Record*, *The Herald News*, *Asbury Park Press*, *Home News Tribune*, *OC Observer*, *Bayonne Journal*, *Kearny-Harrison Journal*, *Secaucus Journal*, *Waterfront Journal*, *El Nuevo Hudson*, *El Nuevo Essex*, *El Nuevo Passaic*, *El Nuevo Union*, *Jersey Journal*, *Kearny Observer*, *Morristown Daily Record*, and *The Newark Star-Ledger*.

B. PERMITTING AND REGULATORY AGENCIES

In addition to the TAC and RCLC meetings described above, key agencies have been engaged by the Portal Bridge Capacity Enhancement Project team throughout the process, as detailed below:

- **December 12, 2006:** The project team met with the USCG and provided a brief overview of the project and its status. The discussion also included agency coordination and public outreach. During this meeting the USCG suggested acceptable bridge heights and options for moveable and fixed bridges.

- **December 20, 2006:** The project team met with the Meadowlands Interagency Mitigation Advisory Committee (MIMAC) and discussed wetland mitigation, remediation, and potential restoration areas for the bridge.
- **May 8, 2007:** The project team, in conjunction with the ARC project team, convened an USEPA coordination meeting to discuss the agency's understanding of the two projects as well as issues related to the re-use of contaminated sites. In addition to a general update on the projects, the group reviewed the Kearny Yard and connecting track plans for the Portal Bridge project. The project team and agency representatives discussed remediation issues—particularly as it related to the Standard Chlorine site, which USEPA informed the project teams was nominated for NPL listing.
- **May 24, 2007:** NJDEP, the ARC project team, and the Portal Bridge project team held a joint coordination meeting to discuss the proposed alignments to connect to the Kearny Yard site at the former Koppers Coke location. The Diamond Shamrock, Standard Chlorine and Jana Corporation sites were also discussed.
- **June 11, 2007:** The project team met with Hudson County officials and the New York/New Jersey Baykeeper to address the needs and goals from the perspectives of Hudson County and the Baykeeper. The Portal Bridge team gave an update on the status of the alternatives screening process and mitigation possibilities for the project. Other topics addressed were: the ongoing drainage and flooding problems in project study area, restoration of the existing area near Laurel Hill Park, the Hudson River Waterfront Walkway, the Hackensack River Greenway, the East Coast Greenway, and the Koppers Coke site.
- **March 28, 2008:** The project team made a presentation to the Governing Body of the Town of Kearny, consisting of the Town Mayor and the Town Council. The team presented the material that would be available at the DEIS public hearing and responded to any questions the Town of Kearny had regarding the project and the EIS process.
- **April 15, 2008:** The project team met with representatives from the New Jersey Historic Preservation Office (NJHPO) to discuss the alternatives in the DEIS, the historical, cultural and archaeological impacts of the proposed alternatives, and the Section 106 process. The project team discussed the eligibility of several potential resources within the area of potential effect. The project's effects were also discussed as well as possible mitigation measures that would be amenable to NJHPO. The draft Memorandum of Agreement (MOA), which was included in the DEIS, was also discussed. NJHPO provided the project team with suggestion for additional measures to minimize project harm to the Section 106 resources.
- **May 6, 2008:** The project team had a follow-up meeting with NJHPO to make revisions to the draft MOA for the project. NJHPO clarified areas where they would like more detail for the proposed mitigation plan for the historical and archaeological resources affected by the project.
- **May 6, 2008:** The project team met with the NJDEP Green Acres Program for Hudson County and representatives of Hudson County Parks, Engineering, and Planning. The attendees discussed parkland impacts related to the proposed project and discussed the applicability of the Green Acres Program to certain parklands and conservation areas in the project area. The group learned about a general timeline for the Green Acres Program and the project team agreed to set up a separate meeting with Hudson County

to discuss specific ways the project can help Hudson County with their park and open space plans as mitigation for parkland impacts.

C. DEIS HEARING

DEIS PUBLIC HEARING

On March 18, 2008, FRA and NJ TRANSIT hosted a public hearing on the DEIS from 4 to 8 PM at the Hudson County Administration Annex, Freeholders' Chamber in Jersey City, New Jersey. Attendees discussed the DEIS, the four alternatives proposed in the document and their concerns with members of the project team informally at an open house, heard a presentation by the project team, and then provided formal oral comments. The presentation reviewed the purpose and need for the project, the project goals, and the environmental process. It also included the four alternatives proposed in the DEIS specifically in terms of engineering alignments and environmental impacts associated with each of the four alternatives.

A total of 23 individuals attended the DEIS public hearing, with 5 attendees making statements for the formal record. The public comment period remained open until March 31, 2008. Written comment sheets, letters, e-mails, and memos resulted in a total of 21 individual comments received during the DEIS comment period.

Combined with the DEIS public hearing was a public open house. This open house encouraged interaction among the public attendees and the study team. At the open house, information was available on boards for informal discussion purposes. In addition to the open house, the public also had access to the DEIS, copies of the presentation, the first and second newsletters for the project, and comment sheets to submit comments to the study team.

DEIS COMMENTS

The Scoping Process generated numerous comments, questions, and suggestions regarding the proposed Portal Bridge Capacity Enhancement Project DEIS, all of which are addressed in this document. The major themes raised during the DEIS comment period were:

- **Bridge Design** comments offered recommendations regarding the bridge design and height to reduce overall project costs.
- **Groups of Alternatives** comments focused on evaluations of the alternatives as well as recommendations to remove or add features to the alternatives in terms of operational capacity and accommodating for future needs.
- **Operations and Infrastructure** remarks addressed allowable bridge heights, types of bridges to be considered and the necessary number of tracks given the operations analysis presented in the DEIS.
- **Environmental Issues** focused on clarifications on a number of environmental topics such ecology, wetlands, historical/cultural resources, contaminated materials, noise, air quality and parklands. Discussion about wetlands and parkland mitigation and future processes associated with the mitigation were also discussed.
- **Relationship to the ARC project** comments discussed the relationship between the two projects including whether or not they have independent utility. Some commentators suggested that the two projects should be combined while others were concerned about th consistency between the efforts and potential cumulative impacts.

The project team recorded all the comments which can be found in Appendix E.

D. CORRESPONDENCE AND STAKEHOLDER MEETINGS

In addition to comments received during the formal Scoping Process and DEIS comment period, Amtrak, and NJ TRANSIT sought input from agencies, stakeholders, and the public through the following mechanisms:

- Comment sheets at meetings,
- E-mails through the study Web site,
- Letters, and
- Oral comments at meetings.
- The project team met individually with owners of properties in the project area to discuss the DEIS and answer any questions. These meetings are detailed below:
    - December 4, 2007: Jana Corporation
    - December 6, 2007: Tierra Solutions, representatives of the owners of the Diamond Shamrock site
    - January 9, 2008: New Jersey Meadowlands Commission
    - February 5, 2008: Secaucus Brownfields Redevelopment, LLC
    - February 20, 2008: Orangewood Properties
    - February 28, 2008: Town of Kearny
    - March 6, 2008: PSEG Corporation
    - March 6, 2008: Hudson County Improvement Authority
    - March 20, 2008: Professional Environmental Systems
    - March 25, 2008: Hudson County

Each of these comments has been reviewed and logged, and when appropriate, responses have been sent via letter and/or e-mail. Communication with affected property owners will continue throughout the project's design and construction phases.

E. SECTION 106

Analysis and documentation has been prepared in accordance with Section 106 of the National Historic Preservation Act (NHPA) of 1966, as implemented by federal regulations appearing at 36 Code of Federal Regulations (CFR) Part 800. It was also prepared in accordance with the New Jersey Register of Historic Places Act.

Section 106 requires federal agencies—prior to taking action to implement an undertaking—to take into account the effects of their undertakings on historic properties. The process consists of four steps:

- Step 1: Initiation of the Section 106 process,
- Step 2: Identification of historic properties,
- Step 3: Assessment of adverse effects, and

- Step 4: Resolution of adverse effects.

If no historic properties are adversely affected, then the Section 106 process is complete. If historic properties are adversely affected, consultation continues and a Memorandum of Agreement (or some cases a Programmatic Agreement) is executed. It is the responsibility of the federal agency, in consultation with the respective State Historic Preservation Office (SHPO), to identify those individuals or organizations who qualify to be consulting parties. The federal agency is also required to consider any written requests by individuals or organizations to participate as consulting parties. Once the consulting parties have been identified, they are afforded opportunities to express their concerns regarding historic properties within a project's Area of Potential Effect (APE), to comment on the effects a project might have on such properties, and to comment on the resolution of any adverse effects.

In May 2007, 39 organizations were invited to participate in the Portal Bridge project's first Section 106 meeting held on May 10, 2007 at NJ TRANSIT headquarters in Newark, New Jersey. At this meeting the project team made a presentation providing a brief overview of the project, an explanation of the Section 106 process, and a preliminary outline of potential APEs. Out of the 39 organizations that were invited, 5 organizations participated. These include:

- Jersey City Landmarks Conservancy,
- New Jersey Meadowlands Commission,
- Jersey City Department of Housing, Economic Development, and Commerce,
- New York/New Jersey Baykeeper and Hackensack Riverkeeper, and
- NJHPO.

After the Section 106 meeting, it was decided that due to the small number of organizations participating in the process, Section 106 Consulting Parties would be invited to attend subsequent meetings of the TAC, where Section 106 issues were discussed. ✷

Chapter 11: Response to Comments[1]

A. INTRODUCTION

This document summarizes and responds to comments on the Draft Environmental Impact Statement (DEIS), issued in February 2008, for the Portal Bridge Capacity Enhancement Project. Oral and written comments were received during the public hearing held on March 18, 2008. Written comments were accepted from issuance of the DEIS through the public comment period, which ended March 31, 2008.

Section B of this chapter lists the elected officials, public agencies, organizations, and individuals that provided relevant comments on the DEIS. Section C contains a summary of these relevant comments and a response to each. These summaries convey the substance of the comments made, but do not necessarily quote the comments verbatim. Comments are organized by subject matter and generally parallel the chapter structure of the DEIS. Where more than one commenter expressed similar views, those comments have been grouped and addressed together.

Some commenters did not make specific comments related to the proposed approach or methodology for the impact assessments. Others had suggested editorial changes. Where relevant and appropriate these edits, as well as other substantive changes to the DEIS, have been incorporated into the FEIS.

B. LIST OF ORGANIZATIONS AND INDIVIDUALS WHO COMMENTED ON THE DEIS

ORGANIZATIONS

1. Alliance for Action, Inc., Philip Beacham, President, written submission dated March 19, 2008 (Alliance)
2. Associated General Contractors of New Jersey, Brian N. Tobin, Executive Director, written submission dated March 17, 2008 (Contractors)
3. County of Hudson, Department of Parks, Engineering and Planning, Stephen D. Marks, Planning Director, written submission dated March 28, 2008; and Borivoj Jasek, County Engineer, written submission dated March 31, 2008 (Hudson County)
4. East Coast Greenway Alliance, New Jersey Committee, Mike Selender, written submission dated March 30, 2008 (Greenway)
5. Institute for Rational Urban Mobility, Inc., George Haikalis, President, oral and written comments dated March 18, 2008 (IRUM)

[1] This chapter is new to the FEIS.

6. Jersey City Landmarks Conservancy, Mike Selender, Vice President, written submission dated March 31, 2008 (JCLC)
7. Lackawanna Coalition, David Peter Alan, Chair, written submission dated March 31, 2008 (Lackawanna)
8. Meadowlands Regional Chamber, Jim Kirkos, CEO, oral and written comments dated March 18, 2008 (MRC)
9. New Jersey Department of Environmental Protection, Office of Permit Coordination and Environmental Compliance, Kenneth C. Koschek, written submission dated April 17, 2008 (NJDEP)
10. New York/New Jersey Baykeeper, Betsy McDonald, Policy Director and Legal Advisor, written submission dated March 31, 2008 (Baykeeper)
11. Regional Rail Working Group, Joseph M. Clift, oral comments (RRWG)
12. Roman Wolchuk Consulting Engineers, Roman Wolchuk, Principal, written submission dated March 25, 2008 (Wolchuk)
13. Tierra Solutions, Inc., Enrique Castro, Project Manager, written submission dated March 27, 2008 (Tierra)
14. United States Coast Guard, Gary Kassof, Bridge Program Manager, written submissions dated May 16, 2008 (USCG)
15. United States Department of Commerce, National Oceanic and Atmospheric Administration, Stanley W. Gorski, Field Offices Supervisor, written submission dated March 31, 2008 (DOC)
16. United States Department of the Interior, Willie R. Taylor, Director, Office of Environmental Policy and Compliance, written submission dated April 17, 2008 (DOI)
17. United States Environmental Protection Agency, John Filippelli, Chief, Strategic Planning Multi-Media Programs Branch, written submission dated March 31, 2008 (USEPA)

INTERESTED PUBLIC

18. DGL, undated written submission (DGL)
19. Kevin M. Hale, written submission dated March 30, 2008 (Hale)
20. Jishnu Mukerji, written submission dated March 31, 2008 (Mukerji)
21. James T. Raleigh, Concerned Citizen, oral comments (Raleigh)
22. Jonathan Woolley, Fort Lee Resident, oral comments (Woolley)

C. COMMENTS AND RESPONSES

GENERAL COMMENTS

Comment 1: The project should reinforce the importance of the corridor to the region's economy. It needs to correct the current bottleneck at the Portal Bridge, especially when having to open for marine traffic and in

anticipation of the increased rail traffic from the two-track tunnel. (MRC)

Response: Comment noted.

Comment 2: The bridge is currently a liability to the economic health of the region and the project must be completed in order to function as a regional portal. (Alliance)

Response: Comment noted.

Comment 3: The project will create heavy construction jobs and improve regional transportation, strengthening the regional economy. (Contractors, L4, page 1)

Response: Comment noted.

Comment 4: Any concerns, including the development of a mitigation plan, should be resolved prior to finalizing the EIS. (DOI)

Response: As discussed in the FEIS, additional coordination and outreach has occurred to further develop mitigation plans, particularly with respect to wetland and parkland impacts. The FEIS has been updated to reflect these efforts, in particular in sections Chapters 5.1, "Land Use and Social Conditions," and 5.6, "Ecology." Project commitments and proposed mitigation measures will be finalized as part of the NEPA Record of Decision.

PURPOSE AND NEED

Comment 5: It is not clear that the study addresses operational inflexibility. The study does little to enhance capacity on the Northeast Corridor. There is doubt that the redundancy across the Hackensack River is going to be available to Amtrak's Northeast Corridor service. The EIS does not address optimizing existing infrastructure and planned improvements. (Raleigh)

Response: The project is intended to address operational inflexibility and capacity constraints in this section of the Northeast Corridor and particularly in its crossing of the Hackensack River. All four build alternatives would meet these objectives while the No Action Alternative would not. As currently designed, Amtrak would be able to use both bridges. However, the proposed three-track northern bridge would serve as the primary route of the Northeast Corridor (as opposed to the existing two-track bridge).

The alternatives optimize existing infrastructure by connecting Secaucus Transfer Station and Swift Interlocking/Kearny Connection (logical termini) and allowing Northeast Corridor trains to use either bridge to cross the Hackensack River. They also provide connectivity for future projects, such as NJ TRANSIT's Access to the Core (ARC) Project, while maintaining the connections to the Morris & Essex Line and Newark Penn Station (NPS).

Comment 6: On page 2-3 of the DEIS it states that the number of trains currently operating across the Portal Bridge are 23. There are two additional NJ TRANSIT trains that were missed, so it is 25 trains. In the ARC Major Investment Study (MIS), they talked about 30 trains crossing the Portal Bridge without new tunnels, so this should say 30 trains to be consistent. (RRWG)

Response: The DEIS refers to the nominal "clear signals," same-direction, single-line capacity of the existing Northeast Corridor between New York Pennsylvania Station (PSNY) and NPS, which is approximately 23 trains per hour. This does not represent the number of trains actually scheduled, which evidently is the "25 trains" to which the comment refers. As average train speed decreases, capacity increases. During peak periods, NJ TRANSIT and Amtrak schedule slightly more trains than the nominal "clear signals" capacity of the rail line in order to increase throughput. Consequently, signal delays increase and average speed decreases. ARC, which is a separate project, identified a maximum same-direction line capacity of 30 trains-per-hour in a No Build scenario. That number represents the best same-direction, single line capacity that could be realized with available and appropriate train control system technology without building any new tracks. That rate of same-direction train movements cannot be operated through the project area today without incurring serious signal delays.

Comment 7: On page 2-5 of the DEIS, the upper table states that the Wittpenn Bridge has a 40-foot clearance. It actually has a 25-foot clearance. The PATH Bridge has a 40-foot clearance as does the Lower Hack at high tide. In the DEIS it says 11 feet. The team was asked to look at bridges lower than 50 feet for a fixed span, and they did not, even though there are other bridges across the Hackensack with lower clearances. This makes a difference because for a 50-foot bridge, you need a 50-foot grade, and that results in trains not being able to get from the Northeast Corridor to the Kearny Yard. (RRWG)

Response: The listed vertical clearances above mean-high-water (MHW) for the Lower Hack and the Wittpenn Bridges have been corrected in the FEIS

to 40 feet and 25 feet, respectively. However, the clearances stated in the comment all apply to these moveable bridges when in the closed position. In the open position (i.e., raised), these bridges each have a vertical clearance of 135 feet above MHW. There are no fixed bridges with a clearance of 25 or 40 feet in this area of the Hackensack River as implied in the comment. The Portal Bridge project has proposed a moveable bridge with a 40-foot vertical clearance that would increase to 50 feet when raised. This would match the clearance of the proposed fixed-span bridge with other fixed spans along the river.

ALTERNATIVES

Comment 8: I do not support any of the four proposed alternatives in the DEIS. The project sponsors failed to consider comments during Scoping, namely to permanently close the existing Portal Bridge and to consider routing THE Tunnel via Hoboken to allow existing infrastructure to be better used. The awkward and time consuming loops at Secaucus would not need to be constructed, and commuters from Bergen and Passaic Counties would save 5-10 minutes using the more direct route via Hoboken to Manhattan (IRUM)

Response: Based on meetings and discussions with the U.S. Coast Guard (USCG), the existing Portal Bridge cannot be permanently closed due to requirements to provide a 50 foot vertical clearance above MHW on this navigable waterway. Furthermore, the proposed Portal Bridge project is intended to address capacity and operational constraints over the Hackensack River and its adjacent interlockings in this section of the Northeast Corridor. It is an independent undertaking from the ARC project and alternatives to that project are not part of the Portal Bridge study. Please also see Comment 10 below.

Comment 9: The Coast Guard in its bridge permitting responsibility cannot approve the location and clearances of any bridge structure until formal application is received and we have conducted our public review process. However, as a Cooperating Agency we have reviewed and followed the studies and analyses that form the basis for the DEIS. The various alternatives presented include combinations of fixed and movable bridges that provide 50 feet vertical clearance above mean high water (fixed) and 40 feet in the closed position above mhw (movable). It is the Coast Guard's opinion that these are reasonable navigational clearances to advance in your design studies. (USCG)

Response: Comment noted.

Comment 10: "Fixing" Amtrak's existing Portal swing bridge in the closed position at 40 feet above mean high water is unacceptable to the Coast Guard as in our opinion it would not provide for the reasonable future needs of navigation. (USCG)

Response: Comment noted.

Comment 11: The four alternatives are very narrow and have no functional difference in terms of railroad operations. The project team did not look at using existing infrastructure, specifically the Lower Hack Bridge. (RRWG)

The four-track tunnel under the Palisades and the three-track lift bridge across the Hackensack River are already in place. Using these resources would reduce costs and completely eliminates the destruction of wetlands in the Meadowlands. (IRUM)

Response: In the 1980s NJ TRANSIT made a strategic decision to pursue the Kearny Connection, which was foreseen by the New Jersey Department of Transportation (NJDOT) as early as 1970 (more than a decade before NJ TRANSIT was formed and before Amtrak existed). It was opened in 1996 and was successful immediately. That service, plus all Amtrak service and several other NJ TRANSIT services, all operate by design into PSNY. Re-directing any of them to operate via Hoboken (i.e., using the Lower Hack Bridge) would not meet any of the goals of the Portal Bridge project and would leave Amtrak with an inadequate and unreliable swing bridge with relatively low clearance above MHW on the navigable Hackensack River. This segment of the Northeast Corridor has the highest train movement density of any rail line in North America. Moreover, there are no high-capacity routes that would allow NJ TRANSIT or Amtrak trains operating via the Northeast Corridor west of NPS to operate to Hoboken. It is true that the four proposed build alternatives have similar operational functionality, but all of them are feasible, meet the operational goals of the project, and meet the anticipated operating needs of NJ TRANSIT and Amtrak.

Comment 12: Because ARC changed its alternative configuration, Portal had to shift its tracks to the south side of the corridor, which reduced the flexibility of potentially using these tracks in the future to serve an East Side Access project. A three-track bridge over the Hackensack for the Northeast Corridor is not justified if you only need two tracks from the tunnel under the Hudson River. (RRWG)

Response: The existing two-track Northeast Corridor is essentially operating at saturation during the morning and evening peak periods. As a result, there are very few, if any, available operating “slots” on the two-track

Northeast Corridor between PSNY and Swift Interlocking during peak periods. This is true despite a prohibition on bridge openings during these peak demand hours. From Amtrak's perspective the 3/2 track configuration as provided in the project alternatives offer segregation of services (i.e., MidTOWN Direct trains and Northeast Corridor traffic), simplified dispatching, reduction in switching operations, redundancy/maintainability features and potential for a future additional Northeast Corridor track from Secaucus Transfer Station to NPS.

Comment 13: The number of tracks on the Northern (Fixed) Bridge should be increased from three to four, given the amount of rail traffic currently flowing through this corridor and the amount of rail traffic anticipated to be generated over the next 50 years by various new passenger rail corridors proposed in both New Jersey and Pennsylvania. This would provide maximum flexibility in rerouting trains if for some reason a track had to be closed down due to breakdown or maintenance issues or if the southern lift bridge had to be taken out of service for an extended period. In essence, the Northeast Bridge would function as an extension of the four-track Northeast Corridor "main" line to the existing NYPS while the southern lift bridge would function as the two-track "feeder" line to the new stub-end 34th Street Pennsylvania Station Expansion (NYPSE) proposed as part of the ARC project. Ultimately a fourth track would be cost effective in eliminating the need to add another track at a later date. (Hale)

Response: Please see response to Comment 15.

Comment 14: The alternatives schematics do not show a connection between the current westbound track line and the proposed Track 5 coming off the fly-over or duck-under to connect to the M&E Line. The drawings at the open house show that there is a westbound connection from the duck-under to the Main Line. Why is there a discrepancy between the two? (Woolley)

The project should build a connection from the duck-under to the main Northeast Corridor in that direction to increase operational flexibility even though current plans are to have all Northeast Corridor trains come out of PSNY. (Woolley)

There is no straightforward connection from the Penn Station Expansion to the Northeast Corridor or its branches in the westbound direction. There should be a track to mirror the function of Track 8 in the eastbound direction. (Mukerji)

Response: A connecting track segment between the proposed Track 5 on the southern alignment and the existing Northeast Corridor at Swift Interlocking has been anticipated. This infrastructure element is not required by the Portal Bridge project to meet any of the project goals. However, engineering for the Portal Bridge project does not preclude construction of this future connecting track by others when needed, and without requiring removal or reconstruction of new infrastructure that the Portal Bridge project would put in place. Some schematic diagrams prepared for presentation purposes may have omitted this element because it would be physically constructed as part of another project, or as a stand-alone project at a later date.

Comment 15: The inclusion of five tracks in the project alternatives is positive, but it should be six in order to avoid an additional environmental review in the future when the extra capacity is needed. (Woolley)

Response: Careful capacity analyses have been developed based on ridership projections made by NJ TRANSIT and Amtrak for 2030—which is well within the anticipated life of the proposed new bridge structures. Those forecasts translate to a possible peak hourly traffic of 39 trains in the peak direction over the Hackensack River. Since that would exceed the practical capacity of a two-track railroad, a minimum of three tracks would be required if there would be little or no growth in "reverse-peak" direction traffic from today's level. Because it is not reasonable to expect no growth in reverse-peak travel demand (e.g., eastbound to New York in the afternoon), at least four tracks across the Hackensack are clearly needed to meet 2030 demand projections and provide some spare capacity for maintenance activities. The project has taken a further step and proposed a fifth track. This will: (1) provide an opportunity to schedule daytime track, train control system, and catenary (electric traction power) maintenance and repairs; (2) provide a "detour" or overtake route in the event of delays or a breakdown; (3) support potential future extension of a third Northeast Corridor track both east and west of the project limits; and (4) support reasonably foreseeable rail traffic growth beyond 2030 for the life of the bridge structure(s), which could be 80 years or more, precisely to avoid construction-related impacts that would spring from a need to construct a third bridge. Traffic volume projections do not support a sixth track at this juncture.

Comment 16: It might make sense to build a third platform on the southern part of the Secaucus Transfer Station rather than just an island platform for two. This would provide additional operational flexibility to increase service and provide space for a train layover. (Woolley)

Response: Work at Secaucus Transfer Station involving a new platform is part of the ARC project and is not part of the Portal Bridge project.

Comment 17: The project should include provision for a westbound waterfront connection which would allow for two-way service on the waterfront connection during the rush, which is currently impossible. (Woolley)

Response: NJ TRANSIT envisions a potential westbound waterfront connection as a separate future project, and has identified a long-term need for this operational capability. However, this connection is not part of the Portal Bridge project.

Comment 18: The bridges should be built on the south side of the existing right-of-way (ROW) as this is the simplest. However, they should not take any more land away from the Riverbend Wildlife Preserve than is absolutely necessary. (Woolley)

Response: Under the southern alignment alternatives (Alternatives DS and FS), impacts to the Riverbend Wetland Preserve have been reduced substantially by using an elevated track structure for the bridge approach as opposed to an earthen or retained embankment and replacing the permanent access road with a temporary one.

Comment 19: Consideration should be given to adding an additional track for the Northeast Corridor between Swift and Hudson to alleviate the current bottleneck situation. The project should extend a branch from Track 1 at Hudson to connect to Track 6 at Swift. (Mukerji)

Response: NJ TRANSIT and Amtrak have both identified the desirability of this potential future infrastructure improvement, which is not part of the Portal Bridge project. A key benefit is that it would allow some NJ TRANSIT trains to avoid Northeast Corridor Track 2 when operating eastbound from NPS, freeing up capacity for faster Amtrak trains and other NJ TRANSIT trains. The Portal Bridge project has been designed to not preclude such a potential future capital project, such that it can be constructed when traffic volume may require it.

Comment 20: The overall cost of the project could be reduced by lowering the rail profiles at the Hackensack River crossings and their approaches and using a steel deck to reduce the structural depth and dead weight of the proposed bridges. A three-span continuous design for the Northern Bridge should reduce the cost and the number of bearings on the intermediate piers. (Wolchuk)

Response: Design considerations and related cost savings such as those discussed in the comment will be addressed during the preliminary engineering phase of the project if a build alternative is ultimately selected as part of the Federal Railroad Administration's (FRA) National Environmental Policy Act (NEPA) Record of Decision.

Comment 21: The project should permanently weld the current Portal Bridge and build a new two-track bridge adjacent to the closed bridge to avoid substantial loss of wetlands. Maritime traffic can be accommodated in lower profile vessels to allow the existing bridge to permanently close. (IRUM)

Response: Based on discussions with USCG, it would not be feasible to permanently weld shut the existing Portal Bridge and require maritime traffic to use lower profile vessels. The construction of a two-track bridge would still involve nearly the same amount of disturbance to wetlands as the three-track northern bridge.

Comment 22: With regards to the new Northeast Corridor bridge over Newark-Jersey City Turnpike, the bridge should be constructed with a minimum clearance of 14'6". (Hudson County)

Response: While further development of engineering design will occur during the preliminary engineering and final design phases, it has been assumed that the roadway clearances for any new overhead railroad bridges would meet or exceed existing clearances. The project is aware of roadway flooding issues associated with the Newark-Jersey City Turnpike and intends to maximize the clearances as much as geometrically possible given the rail profiles' constraints.

Comment 23: The DEIS references several methods to minimize fills; however, the total amount of fill has yet to be quantified. Any final actions regarding fill discharge in waters of the U.S. must be in compliance with the Section 404 (b)(1) Guidelines of the Clean Water Act (33 U.S.C. 1344 *et seq.*). (DOI)

Response: The amount of fill in wetlands was quantified in the DEIS in Table 5.6-5. The total amount of fill shown in the table was conservative as it did not reflect some of the methods which were intended to minimize fills such as the use of elevated structure in the wetland areas on the east bank of the Hackensack River. The table has been updated in the FEIS (Table 5.6-6) and includes these refinements as well as additional measures, such as the relocation of the permanent access road for Alternatives DS and FS. The wetland impacts have been substantially reduced from those disclosed in the DEIS for all alternatives, and in

consideration of the Section 404 (b)(1) Guidelines of the Clean Water Act, which require demonstration that there is no practicable alternative to discharge of fill material in the wetlands.

Comment 24: FRA should consider alternatives to the proposed project, including using best available technology to reduce any fill proposed in the aquatic environment. If an alternative is deemed viable and involves any adverse impacts to the aquatic environment, FRA should develop a comprehensive mitigation plan with the U.S. Fish and Wildlife Service (FWS), National Marine Fisheries Service (NMFS), USEPA, New Jersey Meadowlands Commission (NJMC), and NJDEP to offset the expected adverse impacts to aquatic resources, prior to completion of the FEIS. (DOI)

Response: As discussed above, the wetland impacts of the build alternatives have been substantially decreased since publication of the DEIS. Since the existing bridge and approach tracks must remain in operation while the new bridges are constructed, it is not possible to avoid all impacts to the surrounding wetlands. On the east bank of the Hackensack River, the existing two-track Northeast Corridor embankment is surrounded by wetlands and any new construction would affect these adjacent areas. The project sponsors are working with the Meadowlands Conservation Trust to develop compensatory mitigation for the project and are coordinating this effort with the Meadowlands Interagency Mitigation Advisory Committee (MIMAC), which includes representatives from NJDEP, ACOE, USEPA, NMFS, and USFWS.

TRANSPORTATION

Comment 25: The safety and security section needs to address more than construction vehicles in a post 9/11 environment. (Raleigh)

Response: The commenter is correct that the safety of the project site during the construction phase is addressed in Chapter 6, "Construction." In addition, the safety and security of the operation of the project is discussed in Chapter 4, "Transportation Effects." Amtrak and NJ TRANSIT have provided operating crews with security awareness information and training related to security along the right-of-way. In the future, surveillance along the alignment would continue. Chapter 4 also discusses how the two parallel bridges would provide an enhanced measure of safety and security to the rail transportation system itself, since in the event of a failure of one bridge structure, the other could still accommodate some of the rail traffic. During the preliminary engineering and final design phases of the project, following further

design of the structures and additional infrastructure, a complete System Security and Emergency Management Preparedness Program Plan (SSEMPPP) and System Safety Program Plan (SSPP) with Fire/Life Safety Report will be prepared to comply with FRA and Federal Transit Administration (FTA) regulations.

ENVIRONMENTAL IMPACTS

LAND USE AND OPEN SPACE

Comment 26: In order to divert Green Acres parkland or open space, the property owner (Hudson County) must submit an application for approval from the Commissioner of the NJDEP and the State House Commission. The diversion process and a mitigation plan for the loss of this property as open space should be described in the FEIS and compared to the estimated construction start time. (USEPA)

Response: Text describing the diversion process and possible schedule implications has been added to the FEIS (see Chapter 5.1, "Land Use and Social Conditions").

Comment 27: A number of properties that may be impacted by the proposed project are subject to NJDEP's Green Acres program. Jurisdictional determination is based on information found in the local unit's Recreation and Open Space Inventory (ROSI) on file with the Green Acres program and additional available information. Block 287, Lot 33; and Block 3, Lot 3 are not listed on the owner (NJMC)'s ROSI and therefore are not encumbered by Green Acres. Block 1, Lot 3 is owned by Hudson County and is encumbered by Green Acres. Block 285, Lots 11 and 13; and Block 286, Lot 33 are properties owned by the Town of Kearny. Lots 11 and 13 are held for wetland purposes and may be potentially held for conservation purposes. The three lots are not listed on the Town of Kearny's ROSI filed with Green Acres. (NJDEP)

While all lands held for conservation and/or recreation purposes at the time the local unit last received funding from Green Acres should be listed on the ROSI, such lands come under the jurisdiction of the Green Acres program even if the property is not listed on the ROSI. Such lands are those owned, leased, or otherwise controlled by the local unit and may include land owned in fee, land leased from the Board of Education (or a private entity) for recreation purposes, land owned by a private entity upon which the local unit holds a conservation easement, or any land in which the local unit holds a specific recreation and/or conservation interest. (NJDEP)

Response: In Chapter 5.1 of the DEIS/FEIS, "Land Use and Social Conditions," Block 1, Lot 3 is referred to as the expansion area at Laurel Hill Park. The DEIS states that this parcel of land was purchased by Hudson County and the NY/NJ Baykeeper through the Green Acres program. The chapter has been updated to clarify the applicability of the Green Acres program to the other parcels.

Comment 28: Any activities on Green Acres' encumbered parkland that are not in direct support of conservation or recreational uses will be considered a diversion and will require prior approval from the Commissioner of NJDEP and the State House Commission per N.J.A.C. 7:36-26. (NJDEP)

Response: Since all four build alternatives of the proposed project would require the acquisition of two acres of a Green Acres property—the expansion area of the Hudson County Park at Laurel Hill—the diversion of this property to transportation use will follow the necessary requirements of the Green Acres program. The FEIS has been revised to state that any proposed mitigation for the Green Acres property will require the prior approval of both the Commissioner of NJDEP and the State House Commission.

Comment 29: Hudson County is an urbanized region with a largely disadvantaged population and is ranked last when calculating residents per acre of Preserved Open Space in New Jersey. Under SCORP's "Balanced Land Guidelines" Hudson County does not come close to the standards established by NJDEP. FRA and NJ TRANSIT should make every effort to mitigate the loss of parkland and open space in the project area within Hudson County. (Hudson County)

Response: The project alternatives have been designed to minimize the taking of parks, open space and conservation areas to the extent practicable. This has been accomplished through the use of elevated structures in the area of the newly acquired Laurel Hill Park and the Riverbend Wetland Preserve. Between the DEIS and the FEIS, the project has also eliminated the permanent service road that was planned to the south of the southern bridge in the Riverbend Wetland Preserve. With respect to the newly acquired section of the Hudson County Park at Laurel Hill (and as discussed in the Section 4(f) evaluation), there are no prudent and feasible alternatives to the use of the parkland. FRA, NJ TRANSIT, and Amtrak are committed to providing all necessary measures, both long-term and during construction, to minimize the harm from such a use of the County parkland. In addition, the current condition of the Laurel Hill Park expansion area is an inaccessible wetlands area. In an

effort to minimize harm, proposed mitigation measures for the loss of this Section 4(f) property could include the following: replacement parkland possibly with the purchase of new open space or through the development of a conservation easement; improvements to the existing Laurel Hill Park; improvements to the future park at the expansion parcel that would also provide waterfront access as envisioned by the coastal zone management regulations; and linear access to the Hackensack River to be located on either side of the river to the extent feasible and in consideration of potential security concerns (which would adhere to existing coastal zone management and waterfront access regulations).

Comment 30: With regards to Laurel Hill Park, the two acres in question are both parkland and wetlands. The mitigation for one may not meet the mitigation standards for the other. In particular, the Green Acres program and Statehouse Commission process require the replacement of parkland diverted to other uses, not the enhancement of existing parkland as appears to be suggested in the DEIS. (Hudson County)

The build alternatives for the Portal Bridge project will require acquisition of approximately two acres of Laurel Hill Park owned by Hudson County and the New Jersey Meadowlands Commission. Appropriate mitigation measures for the loss of this open space area will need to be developed in conjunction with Hudson County and the New Jersey Meadowlands Commission. (DOI)

Response: The Laurel Hill Park expansion parcel is owned by Hudson County. It is correct that impacts to the expanded Laurel Hill Park will require compensatory mitigation for adverse impacts to both parklands and wetlands. This may require separate mitigation measures for the wetlands and parkland impacts. In addition, the project's sponsors recognize the requirements under the Green Acres program and will work with the county in the diversion/disposal process. However, it should be noted that the NJDEP Green Acres program rules (N.J.A.C. 7:36-26.10) state that disposal or diversion of parkland could involve monetary compensation that could be used for parkland improvements.

Comment 31: Abandonment of the existing Portal Bridge would provide an opportunity to mitigate the effects of the project upon the Pennsylvania Railroad Historic District. The proposed southern lift bridge should be sited on a new alignment away from the existing alignment. After removal of the existing swing span and pivoting drum from the Portal Bridge, a new high level hiking/biking "memorial" fixed replacement span should be designed to reconnect the two approach portions of the

bridge and the bridge and its approach lands should be make a part of Laurel Hill County Park. This would serve the dual purposes of compensating Laurel Hill County Park for the loss of lands to the new fixed bridge alignment and at the same time preserve a scenic section of the Pennsylvania Railroad "High Line" for purposes of historic interpretation to the public. It might also satisfy proponents of the East Coast Greenway trail who have been seeking an appropriate crossing of the Hackensack River. (Hale)

Response: See responses to Comments 10, 34, 37, and 38.

Comment 32: NJDEP permits disposal of parks and open space for transportation projects, but strongly discourages it. (Hudson County)

Response: The project recognizes the need to protect parklands and open space and, as a project under the jurisdiction of the U.S. Department of Transportation (USDOT), is subject to Section 4(f) of the Transportation Act of 1966. This Act provides special protection to public parklands and as part of the Section 4(f) evaluation the project sponsors must demonstrate that there is no prudent and feasible alternative to the "use" of such parkland. This has been demonstrated for the proposed Portal Bridge project as discussed in Chapter 8, "Section 4(f) Evaluation," of the EIS. The parkland in question is also afforded special consideration under the Green Acres program and mitigation has been proposed for the loss of the parkland. Text has also been added to the FEIS to discuss the diversion process for property under the jurisdiction of the Green Acres program.

Comment 33: The Hackensack River Swing Bridge is an eligible site for the State Register of Historic Places. The 2007 County Park plan also lists parcels immediately south of Laurel Hill Park for acquisition and the future expansion of the park. (Hudson County)

Response: As described in Chapter 5.1, "Land Use and Social Conditions," the Hackensack River Walkway would not be adversely affected by the proposed project. Chapter 5.2, "Historic Resources," addresses the historic character and eligibility of the Hackensack River Swing Bridge (i.e., Portal Bridge) and the proposed mitigation measures concerning this historic resource. As described in Chapter 5.1, "Land Use and Social Conditions," and Chapter 5.9, "Environmental Justice," the project sponsors will continue to work in conjunction with Hudson County and other stakeholders to develop appropriate mitigation measures for the property acquisition.

Comment 34: Discussion should be included as to whether or not the completion of other areas of the Hackensack River Walk is being considered as mitigation for other property acquisitions. (Baykeeper)

Response: As of this point in the project development, off-site completion of the Hackensack River Walk has not been assessed. However, in keeping with the project sponsors' commitments to provide mitigation for the impacts to public parkland and open space, areas outside of the immediate project site may be suitable for compensatory mitigation.

Comment 35: The NJMC Master Plan proposes a "Secaucus Trail" from Laurel Hill Park along the railroad/utility road south past the PSEG Hudson Generating Station to "link Lincoln Park and Liberty Gap Trail." (Hudson County)

Response: The proposed routes of the "Secaucus Trail" (also known as the "Hackensack River Walk") are described on pages 5.1-13 and 5.1-18 of Chapter 5.1, "Land Use and Social Conditions." The proposed project would not adversely affect the proposed routes of the Hackensack River Walk.

Comment 36: The East Coast Greenway recommends using the Boonton Line swing bridge over the Hackensack River as a locally preferred alternative off-road alternative. (Hudson County)

Response: All build alternatives would maintain current access along the Boonton Line and would not preclude this option for the East Coast Greenway. As described in the DEIS and currently on page 5.1-19 of the FEIS, the proposed project would not adversely affect either of the known potential routes of the East Coast Greenway in the study area.

Comment 37: Per request by Hudson County, the feasibility of adding bicycle/pedestrian access to one of the two planned replacements for the Portal Bridge should be studied during the engineering phase of the project. It may be possible to combine bicycle/pedestrian access with service vehicle access. (Greenway, DGL)

Response: The addition of a bicycle/pedestrian walkway to the railroad's bridge structures would create an unacceptable safety and security hazard for Amtrak and NJ TRANSIT. Due to security reasons, transportation infrastructure access is being limited to qualified and experienced railroad workers who have been cleared and meet the requirements of federal bridge safety standards.

Comment 38: Public access (bicycle and pedestrian) should be provided along the Portal Bridge service road from Belleville Turnpike as part of the planned mitigation efforts. (Greenway)

Response: Parallel access along the railroad embankment, adjacent to the service road, would pose safety and security issues which may render this option infeasible or difficult to implement. However, during the preliminary design phases, in conjunction with the safety and security assessment, the project sponsors will work with the County and other stakeholders to provide waterfront access in this area to the extent feasible.

Comment 39: NJ TRANSIT and FRA should coordinate efforts with Hudson County and the New York/New Jersey Baykeeper regarding other public access and open space projects that could be helped by the project. (Baykeeper)

Response: The project sponsors are committed to providing mitigation for impacts to the Hudson County Park at Laurel Hill and working with the County on measures to improve public access to the waterfront particularly as it relates to the area encompassing the recently acquired property adjacent to the proposed northern bridge. The project sponsors would also work with other stakeholders, such as the New York/New Jersey Baykeeper and East Coast Greenway Alliance, to enhance existing public access to the waterfront.

Comment 40: The project must include public access and open space components as part of the mitigation plans to offset impacts to the surrounding community and environment. Although there is proposed mitigation in the DEIS, it is problematic that there is no discussion of other mitigation measures such as preserving surrounding property for public access and open space. (Baykeeper)

Response: As discussed in the DEIS and currently on page 5.1-19 of the FEIS, the project sponsors are committed to working with the County in developing mitigation measures that could include access, infrastructure, and/or facility improvements at Laurel Hill Park. These improvements could occur on the new portion of the park, the existing Laurel Hill Park, or another location. However, there are environmental, safety and security issues which must be considered as part of the development of any public access in this area. The project sponsors will continue to work with the County on a mutually agreeable plan to mitigate the impacts to open space and parklands from construction of the preferred alternative.

HISTORIC/CULTURAL RESOURCES

Comment 41: The existing bridge falls under Section 106 of the National Historic Preservation Act and reuse of the structure looks unlikely. The existing bridge should be documented to relevant historic archival standards before it is removed and/or dismantled. (JCLC)

Response: As discussed in the DEIS and currently on page 5.2-15 of the FEIS, as part of the mitigation for the adverse effects on historic resources, the project will prepare Historic American Engineering Record (HAER) documentation for the existing Portal Bridge.

AIR QUALITY

Comment 42: The dollar value of construction as a surrogate for emissions for a project of this size, cost, and construction duration should not be used. Despite the DEIS concluding that general conformity de minimis thresholds are not exceeded during construction, it does not provide any supporting information. Once a preferred alternative is selected, a general conformity applicability analysis and subsequent conformity determination (if warranted) must be conducted. There will be a different mix of non-road equipment than what was used for Lower Manhattan, making it a poor model. Specifically, the DEIS states that material delivery and disposal, and construction of the bridge piers will be accomplished using barges, and we expect there would be at least one tug in operation. Delivery of other materials along with track and overhead wire work would be accomplished using trains. As such, a project-specific, detailed emissions inventory should be completed. Further, Sulfur Dioxide (SO_2) is a $PM_{2.5}$ precursor and must also be addressed in the general conformity determination. (USEPA)

Response: For its intended purpose of determining whether air pollutant emissions during construction of the project would exceed the General Conformity thresholds, the DEIS methodology is appropriate for several reasons. First, the required accuracy is much less than if a detailed microscale simulation of actual pollutant concentrations was required. This type of analysis would be required if sensitive receptors like residences or schools were in close proximity (less than several hundred feet) of the construction equipment. The purpose of the DEIS analysis was to determine whether or not construction of the Portal Bridge project could result in emissions exceeding 50 or 100 tons per year, depending upon the specific pollutant. As discussed in the Air Quality chapter, the NO_x emissions are the highest at 15 tons per year and are still well below the

threshold value of 100 tons per year. Even if the estimates were doubled the emissions would remain well below the thresholds.

Secondly, while there would be a somewhat different mix of non-road diesel-powered construction equipment between the Portal Bridge and Lower Manhattan transportation projects, many of the larger sources (which contribute a disproportionate share of the annual emissions) would be the same. For example, construction of the Portal Bridge project would involve substantial use of cranes for erecting steel and drilling caissons, generators to supply power for machinery and lighting and equipment for pouring concrete foundations. This is similar to the cranes and dozers, welders and impact wrenches, air compressors, pumps, and generators which were the major sources of NO_x and particulate matter for the Lower Manhattan transportation projects. Equipment unique to the Portal Bridge project, such as diesel-powered marine engines or diesel locomotives would not be used everyday and would be used rather sparingly for specific tasks such as moving a barge from one pier location to another.

Thirdly, in terms of emissions, the comparison is also based on the same level of mitigation—Tier 2 engines with after-market retrofits such as diesel particulate filters or diesel oxidation catalysts. Therefore, since the major sources of emissions are the same and the controls are similar the use of a proportional model based on construction cost is appropriate.

Comment 43: Pages 6-16's discussion of USEPA's "Clean Air Non-Road Diesel Rule" implies the rule would require after-market retrofits of Tier 2 non-road engines. This is not true for Tier 2-certified engines. We note that the project is close to Laurel Hill Park where children may be exposed to increased concentrations of particulate matter and air toxics for the duration of construction. FRA can ensure the cleanest diesel engines are used during construction by adopting clean diesel practices and enforcing these measures through contracts. (USEPA)

Response: The language regarding the USEPA's "Clean Air Non-Road Diesel Rule" has been clarified in the FEIS. With respect to the use of clean diesel practices, the project intends to require the use of Tier 2 engines with after-market filters to the extent practicable and technically feasible to reduce emissions of NO_x and particulate matter from non-road engines. While the project is proposing these mitigation measures to reduce overall emissions of these pollutants, it should be noted that the project site is located in an isolated area which substantially reduces the potential for exposure to elevated pollutant concentrations for the general public and, particularly, susceptible populations such as the

elderly, infirmed, or children. In fact, the more commonly used portions of Laurel Hill Park, such as the ballfields, are more than ¼-mile from the nearest area of construction. The closest publicly accessible areas are approximately 1,000 feet away. In addition, these areas are physically separated from the project site by Snake Hill, which reduces the possibility that direct emissions from non-road construction equipment, due to line-of-sight limitations, could substantially affect ambient pollutant levels in the park.

Comment 44: This proposed project falls under the requirements of the Federal Transportation Conformity Rule which requires the relevant Metropolitan Planning Organization (MPO)—in this case, the North Jersey Transportation Planning Authority (NJTPA)—to demonstrate that the transportation projects in their Transportation Improvement Programs (TIPs) and Transportation Plans (TPs) are in conformity with the air quality emissions budgets established in the State Implementation Plan (SIP). This project is included in the NJTPA TIP for Fiscal Years (FY) 2008-2012 under the reference number T539. A discussion on transportation conformity should be included in the EIS. (NJDEP)

Response: Since FRA is the lead federal agency for NEPA review, the project is subject to General Conformity and not Transportation Conformity (which would apply if FTA or the Federal Highway Administration [FHWA] was the lead federal agency).

Comment 45: While generally supporting public transportation projects because of their environmental benefits, due to lack of a General Conformity analysis and mitigation plans, especially one to address impacts to wetlands, each of the four build alternatives is being rated EC-2 (Environmental Concerns–Insufficient Information). (USEPA)

Response: A general conformity analysis was prepared for the DEIS to address wetland impacts and mitigation plans, and can be found in Chapter 5.4, "Air Quality" of the FEIS. Discussion of additional mitigation is included in Section F of Chapter 5.6, "Ecology."

NOISE

Comment 46: All alternatives would have moderate and severe noise impacts on the expanded Laurel Hill Park (which should be visually represented on a map) and should address the possible impacts on the fauna of the area. Noise should be analyzed under the cumulative impacts section of the

document and include the increase in train traffic from ARC. Mitigation for these impacts should be included in the FEIS. (USEPA)

Response: The noise impacts for all alternatives (including the No Action Alternative) is a result of the more than 500 daily trains that traverse this portion of the Northeast Corridor. Due to these operations, noise levels within several hundred feet of the rail corridor currently exceed FTA criteria for outdoor recreation. It is only the recently acquired portion of the expanded Laurel Hill Park that would fall within the noise impacted area and only once it becomes publicly accessible sometime in the future. There are no adverse noise impacts at the site of the current Hudson County Park at Laurel Hill which is separated from the project site by the New Jersey Turnpike.

With respect to fauna, the local wildlife is already exposed to these elevated noise levels and would be expected to have adjusted to the local conditions (e.g., nesting away from the rail line) over the years. By itself the proposed project would not have a measurable effect on ambient noise levels over the long-term and therefore would not affect local fauna from that perspective. The cumulative effects analysis does consider the increase in trains and its effect on ambient noise levels. As stated in the DEIS and currently on page 7-14 of the FEIS, the additional trains over the bridge would extend the noise impacted area by 54 feet. It also states that the noise levels at any given point would increase by less than 3 dBA which is an imperceptible change. Attempting to reflect these small differences in impact area on a map of the scale required for the Portal Bridge project would not provide any additional detail since only a small portion of one property is affected.

ECOLOGY

Comment 47: The DEIS lacks discussion of the impacts of the proposed project on Essential Fish Habitat (EFH). The project area is designated as essential fish habitat for a variety of federally managed species. EFH regulation at 50 CFR 600.905 mandates the preparation of EFH assessments. Section 305(b)(2) of the Manguson Stevens Act (MSA) requires all federal agencies to consult with NMFS on any action that may adversely affect EFH. Since the DEIS does not include an EFH assessment as required in the EFH Final Rule, FRA must either provide a separate assessment or include one in a revised DEIS. (DOC)

Response: The EFH was included in the Appendix C to the DEIS. See page 5.6-12 under the section labeled *Fish* for the reference to the EFH. A summary of the EFH has been added to Chapter 5.6, “Ecology,” of the FEIS.

Comment 48: Under the section "Anadromous Species" on page 5.6-14 and 15, please note that alewife and blueback herring, collectively called river herring, have been designated as species of concern by NMFS. Both of these anadromous fish species occur in the Hackensack River and spawn in the river's upper freshwater reaches. (DOC)

Response: The reference to alewife and blueback herring has been added to the discussion in the FEIS.

Comment 49: In the section "Threatened and Endangered Species" on page 5.6-16, the citation "Green 2007" is incorrect. It should read "Greene 2007." (DOC)

Response: This has been corrected in the FEIS.

Comment 50: On page 6-24, anadromous fish migration and spawning runs are likely to be from March 1 to June 30, not April 1 to June 30. (DOC)

Response: The text has been changed in the FEIS to "typically April through June by the NJDEP and March through June by the National Oceanic and Atmospheric Administration (NOAA)."

Comment 51: FRA should continue to coordinate with the FWS, NMFS, and NJDEP to determine if seasonal restrictions or other requirements are necessary to avoid adverse impacts to aquatic organisms. At a minimum, all in-water work should be avoided from April 1 to June 30, to protect anadromous fish. (DOI)

Response: See responses to Comments 50 and 53.

Comment 52: NJ TRANSIT should coordinate with the NJMC and Hudson County because additional approvals to impact the area or additional compensation above the required wetlands mitigation may be necessary. (DOC)

Response: The project's sponsors have, and will continue to, coordinate with NJMC and Hudson County with respect to certain approvals that are needed for any of the build alternatives. These approvals and permits will require mitigation measures that can only be developed in a coordinated process. It is expected that once a preferred alternative is selected and the preliminary engineering phase begins, coordination among the parties will increase as the project begins to develop land use and wetland permit applications.

Comment 53: NJDEP's Division of Fish and Wildlife (DFW) has threatened and endangered species (T&E) concerns. The area is utilized by the northern harrier, glossy ibis, and snowy egrets. There is a peregrine falcon nest buffer to the south outside of the project area. A timing restriction of March 15 to August 15 would be necessary to protect these species during their breeding season. This timing restriction would also serve to protect other species that are protected under the Federal Migratory Bird Treaty Act. (NJDEP)

Response: The EIS acknowledges the potential for a number of T&E species and other species of concern to occur within the project area, including several bird species such as peregrine falcon. The Portal Bridge project sponsors will will work in consultation with the NJDEP to evaluate the presence/absence of key species and adjust construction methods and schedule during the restricted period (March 15th to August 15th) to reduce impacts to T&E birds based on their seasonal presence in the project area.

Comment 54: NJDEP's DFW also has fisheries concerns. A water timing restriction of March 1 to June 30 is necessary to protect the anadromous fish species from any sediment generating activity and/or pile driving. (NJDEP)

Response: The EIS acknowledges the potential for a number of fish species of concern to occur within the project area, including several anadromous fish species such as American shad, blueback herring, and alewife. As part of the permitting process, the project sponsors will work in consultation with the NJDEP to adjust construction methods and schedule during the regulatory-restricted periods to reduce impacts to anadromous fish species based on their seasonal presence in the project area. For example, herring migration is closely linked to water temperature. Water temperatures that vary significantly from those at which herring species migrate and/or spawn may allow for some flexibility in the permitted construction methods and schedule.

Comment 55: The affected zone for wetlands impacts is too small. Contaminated sites have plumes that are far bigger than surface analysis will indicate. This is more than just concern about impacts to a bird sanctuary. The team has to look at the cumulative effect on wetlands of many transportation projects going on, including ARC and the Secaucus connection to Xanadu. (Raleigh)

Response: The wetland impact in Chapter 5 of the DEIS discussed both direct and indirect effects. The indirect effects analysis considered such issues as the ecological effects from increased shading due to additional rail infrastructure over open water and wetland areas. The contaminated

materials assessment included a very large study area and discussed potential effects on both public health and the environment. The analysis also included a discussion on measures to be employed during construction to avoid inadvertent discharges of contaminated materials that could result in adverse effects on the ecological resources of the Meadowlands.

Additional discussion of the indirect or secondary effects over a large area is contained within Chapter 7, "Secondary Cumulative Impacts." In this chapter of the EIS, the potential adverse effects of the proposed project, in conjunction with other foreseeable projects in the New Jersey Meadowlands are discussed. These potential indirect effects include issues related to habitat fragmentation, displacement of wildlife, etc as a consequence of the project's direct effects that are removed in time and space from the direct effects. Measures to mitigate any secondary or indirect impacts in these areas are discussed in the chapter. Furthermore, NJ TRANSIT has been coordinating with the appropriate regulatory agencies to discuss potential compensatory mitigation for the cumulative impact to wetland due to both the Portal Bridge and ARC projects. See also response to Comment 88.

Comment 56: Eight acres of lost wetlands and twenty acres of disruption would be unnecessary if the project looked at other alternatives that were not tied to ARC. (RRWG)

Response: With or without the ARC project, two new bridges would be required over the Hackensack River to meet the future needs of Amtrak and NJ TRANSIT. These bridges will inevitably result in impacts to wetlands since construction of at least one bridge must be off-line from the existing Northeast Corridor thereby requiring construction in adjacent wetland areas. Due to the physical constraints of the project site, any construction in this area would result in unavoidable impacts to wetlands both temporary and permanent. The project has minimized its impacts on adjacent wetlands by maximizing the use of elevated structures as opposed to filled embankment for much of the track work through the wetland areas.

Comment 57: With regards to page 6-25 of the DEIS, if moving power lines involves impacts to wetlands or waters, these impacts should be included in the DEIS. (DOC)

Response: At this time the exact design of the relocation of the 138Kv transmission line that feeds the Amtrak catenary system has not yet been determined. While the impacts to wetlands for the foundations of several monopoles has been included in the impact quantities it is not

yet defined if, and if so where, any new poles would be located. The 138Kv feeder system would be carried on the new Northern bridge structure for as long as possible before diverting to the existing pole line along the west side of the Norfolk Southern Boonton Line.

Comment 58: In order to satisfy the Clean Water Act Section 404 requirements, the FEIS will need to identify a preferred alternative. If the preferred alternative has greater wetland impacts than other practicable alternatives, the FEIS must explain why it was selected. The FEIS will further need to identify, map, and quantify acreages of each type of wetland that are proposed to be permanently impacted, temporarily impacted, fragmented or permanently shaded. (USEPA)

Response: The FEIS does identify a preferred action and build alternative (DS) with a slightly greater impact on wetlands than one other build alternatives (DE). While substantially reduced from the DEIS estimates, Alternative DS would require approximately 0.3 additional acres of permanent fill in the Riverbend Wetland Preserve as compared to Alternative DE. The other alternatives (FS and FE) would result in a greater impact to wetlands than the preferred alternative. The selection of Alternative DS as the preferred alternative is discussed in Chapter 9, "Preferred Alternative," and does include an analysis of why an alternative with slightly higher impacts on wetlands was selected.

Comment 59: The FEIS should explain how the statement "the ARC project was considered in the development of the feasible Portal Bridge build alternative and is considered for its potential to cause cumulative effects" with respect to how this affects the acreage of wetlands impacted by the project. While earlier reports recommended two bridges with two tracks each, the build alternatives include one bridge with three tracks. The FEIS must demonstrate the necessity of the third track due to rail volume or safety reasons. (USEPA)

Response: The ARC project, along with other future actions and present needs, were considered in developing feasible build alternatives. One of the project objectives was not to preclude the possible construction of the ARC project. Therefore, it was necessary to provide for future connectivity to the ARC project in the assumption that it would ultimately be constructed. It would not be prudent to construct new river crossings and related infrastructure without consideration of another potential future project that would affect project planning. However, the ARC project does not effect the provision for a third track on the northern bridge. The third track is intended to provide the Northeast Corridor with the required connectivity for a future Track 4 that could

extend west of Swift Interlocking to NPS. A three-track northern bridge is also required to support Amtrak's goal of at least a three Northeast Corridor tracks from Secaucus to NPS. The statement that the "ARC project was considered for its potential to cause cumulative effects" is related to the increase in train service that would occur if both projects were constructed. This is discussed in Chapter 7, "Secondary Cumulative Impacts."

Comment 60: In Chapter 5.6, Section E, the term "regulated wetland buffer" should be defined. (USEPA)

Response: Regulated wetland buffer is defined at N.J.A.C. 7:7-3.28. Wetland buffer or transition areas are areas of land adjacent to wetlands which minimize adverse impacts on the wetlands or serve as an integral component of the wetlands ecosystem. In New Jersey, wetland buffer or transition areas of up to 150 feet in width are established by regulation adjacent to all wetlands defined and regulated under the Freshwater Wetlands Protection Act (N.J.A.C. 7:7A). For all other wetlands, including wetlands regulated under the Coastal Wetlands Act of 1970, a wetlands buffer of up to 300 feet has been established.

Comment 61: Cedar Creek Marsh was to have been the Mitigation Project for the Kearny Connection Project, but it was never carried out. The Mitigation Project would have reduced flooding problems that occur frequently on the Newark-Jersey City Turnpike under the Northeast Corridor Bridge. Some of the Portal Bridge alternatives involve construction or permanent impacts to the Cedar Creek Marsh. (Hudson County)

Response: Appropriate mitigation measures for the Kearny Connection project were identified and implemented by NJ TRANSIT through coordination with the Hackensack Meadowlands Development Commission (now NJMC) and other agencies. It is correct that the Portal Bridge project's build alternatives would potentially impact Cedar Creek Marsh. The impact would consist of permanent and temporary impact to a portion of this wetland area to allow for additional tracks along this segment of the Northeast Corridor. As discussed in Section E of Chapter 5.6, "Ecology," of the EIS, these impacts have been minimized. During the preliminary engineering phase of the project, detailed hydrological studies will be conducted in connection with the permits required for construction in wetlands and floodplains. These studies will identify improvements needed to reduce flooding along the Newark-Jersey City Turnpike. It should also be noted that some budget has been allocated in the construction cost estimates shown in Chapter 3, "Project Alternatives," for drainage improvements along the corridor.

Comment 62: The proposed project will need numerous permits and approvals form the NJDEP's Division of Land Use Regulation. NJ TRANSIT should continue to work with the Division of Land Use Regulation as the project advances through design to construction. (NJDEP)

Response: The project recognizes that numerous approvals and permits will be required from NJDEP including, but not limited to Waterfront Development, Tidelands and Flood Hazard Control permits from the Land Use Regulation Program, dewatering and discharge permits from the Divisions of Water Quality and Water Supply, ISRA and a No Further Action determination from the Bureau of Site Remediation, as well as approvals from the Green Acres program and the Historic Preservation Office.

Comment 63: No further consultation pursuant to Section 7(a)(2) of the ESA is required by FWS. If project plans change, or if new information is obtained that indicates the occurrence of a federally listed species at the proposed project site, this determination may be considered. (DOI)

Response: Comment noted.

Comment 64: Consultation with the NMFS regarding the federally listed shortnose sturgeon needs to be concluded. (DOI)

Response: The project initiated the informal Section 7 consultation process with NMFS by requesting a list of regulated species in the project area. The NMFS responded that "No threatened or endangered species under NMFS' jurisdiction are expected to occur in the project area" by way of memorandum dated September 28, 2007. This memorandum is provided in Appendix C. The memorandum also acknowledges that the waters of the Hackensack River provide habitat for other species of interest to the NMFS, but that are not legally protected under the Endangered Species Act. The NMFS' recommendations for protecting these species include an April 1 through June 30 in-water restriction period—a period also codified under NJDEP regulations. The memorandum is silent on "Critical Habitat;" however, the memorandum indicates that further EFH consultation by the lead federal agency will be necessary as part of the federal permitting process. The EFH for the project is also provided in Appendix C. The NMFS memorandum also recommends that compensatory mitigation for impacts to wetlands and waters of the U.S. be provided. This mitigation is included as part of the project, as appropriate. Based on the project sponsors' understanding of the Section 7 consultation process, its review of the Final ESA Section 7 Consultation Handbook, and the conclusions of the NMFS

memorandum, the informal consultation process ends with no formal consultation required.

Comment 65: FWS is unaware of any mitigation efforts being proposed at the Kane Tract, contrary to a reference in the DEIS that the Kane Tract is being considered. Therefore, a mitigation plan should be developed prior to the finalization of the EIS. (DOI)

Response: As discussed in Section F of Chapter 5.6, "Ecology," of the EIS, a preferred option is to purchase credits from an established wetland mitigation bank. Currently, there are no approved banks available within the Meadowlands District. However, credits may become available from the Kane Tract prior to Portal Bridge construction commencement in December 2011. The Kane Tract is being developed by the Meadowlands Conservation Trust as a wetland mitigation bank specifically for transportation projects in the Meadowlands District. Other options for providing compensatory mitigation for the project include: completion of a project-specific mitigation project at a site in the Meadowlands, modeling possibly a portion of the Kane Tract on Oritani Marsh; completion of a mitigation project in conjunction with the ARC project, which would also result in wetland impacts in the Meadowlands District; establishment, restoration or enhancement of the wetland areas bordering the Portal Bridge project site; or a combination of the above mitigation strategies. Project commitments and mitigation measures will be finalized as part of the NEPA Record of Decision.

Comment 66: The mitigation section does not interpret the guidance on compensatory mitigation provided by MIMAC of which NMFS is a member. MIMAC has not received any proposal to construct a mitigation bank on the Kane Tract from the property owners or any other entity. While it is possible a compensatory mitigation bank could be developed, no bank exists now and it is not likely a bank will be approved before NJ TRANSIT needs to have its compensatory mitigation plan identified for its permits and for construction. NJ TRANSIT should look elsewhere for suitable mitigation sites, or design a stand-alone compensatory mitigation project at the Kane Tract that would not be included in any future bank. (DOC)

Compensatory mitigation, proposed to offset unavoidable adverse impacts, must be evaluated during the NEPA planning process in order to assess net impacts from the project. (DOI)

Response: See response to Comment 65.

CONTAMINATED MATERIALS

Comment 67: In response to the numerous areas of concern noted in the DEIS, NJDEP's Site Remediation Program is actively reviewing reports involving sites that will be needed to construct and implement the project. NJ TRANSIT should continue to work with NJDEP on site remediation issues as the project advances to design, construction, and operation. (NJDEP)

Response: The project team will continue to work with NJDEP's Site Remediation Program on specific concerns for each specific property that may be affected by construction of the preferred alternative. Detailed site investigations and remedial investigations will be conducted during the preliminary engineering phase of the project which would commence after the ROD.

Comment 68: Construction of the Portal Bridge will involve disturbance on both sides of the Northeast Corridor to properties that are designated NJDEP Hudson County Chromate Chemical Production Waste Sites. (Tierra)

Response: This has been disclosed in the DEIS/FEIS and it is recognized that additional investigations, analysis, and design will be required during the next phases of the project to avoid any adverse effects related to these sites.

Comment 69: There should be a higher level of scrutiny for properties within the project study area to ensure the most up-to-date information regarding contaminated materials. There should be direct contact with property owners, local officials, and/or occupants of the specific property. (Tierra)

Response: Since the studies for the DEIS focused on a large number of alternatives that were ultimately reduced to four build alternatives, the contaminated materials assessment did not include extensive site investigations of each potentially affected site. As the project proceeds into preliminary engineering, preliminary site assessments and detailed subsurface investigations will be conducted for the selected alternative. The level of information developed as part of these investigations will allow for a more refined development of specific measures to be employed at each site where subsurface disturbance would occur. These measures will then be adopted into the construction documents for the project.

Additionally, the project sponsors have met with NJDEP, USEPA, and potentially affected property owners to discuss the status of investigations and remedial activities. The FEIS has been updated to

reflect more accurate information provided by property owners and others.

Comment 70: Sites 47, 48, 50, 51, 58, 103, 113, and 131 reportedly contain deposits of chromite ore processing residue (COPR). The DEIS should recognize that the COPR sites are part of a separate effort to investigate, characterize, and assess remediation alternatives under a Consent Order between representatives of the Site 113 (Diamond Shamrock) property owner and NJDEP. (Tierra)

Response: The FEIS has been updated to reflect this information regarding the current status of the chromate chemical production waste sites.

Comment 71: Care should be taken when using information in the regulatory and archived files such as federal and state databases because some information and reviewed information from those sources has yielded discrepancies, errors, and omissions with regards to sites affected by this project. Such concerns include the absence of some sites, incorrect addresses or site demarcation, or designation of sites eliminated from previous NJDEP lists. (Tierra)

Response: It is recognized that the federal and state databases have limitations and may contain outdated information. As stated above, the project sponsors met with NJDEP, USEPA, and potentially affected property owners to discuss the status of investigations and remedial activities. The FEIS has been updated based on recently provided information. Once an alternative is selected as part of the project's ROD and the preliminary engineering phase begins, detailed studies (including surface investigations and additional coordination with property owners and regulatory agencies) will be conducted for the affected sites.

Comment 72: Table 5.7-4 in Chapter 5.7, "Contaminated Materials," contains some outdated and/or incomplete information regarding the following: Item Nos. 13, 15-20, 40 and 46. Furthermore, COPR Sites 47, 51, 103, and 131 are missing. (Tierra)

Response: The table has been updated in the FEIS to reflect the information provided by the commenter.

Comment 73: The information in the DEIS regarding the remediation of the Koppers Coke site and sediments in the Hackensack River needs to be updated. (Tierra)

Response: The text has been updated in the FEIS.

Comment 74: The discussion of chromate ore in Chapter 5.7, "Contaminated Materials," is misleading because the material of interest at the Hudson County chromate sites is in fact the fraction of chromate in chromite ore processing residue (COPR). There are 9 COPR sites in the vicinity of the Portal Bridge. Sites 50, 103, 113, and 131 would be affected by any of the alternatives while Sites 51 and 58 would *potentially* be affected (Tierra)

Response: The FEIS has been updated to reflect the fact that the material of interest is the chromate in the chromite ore processing residue (COPR).

Comment 75: The discussion in the December 2006 Scoping Document regarding Hudson County Chromate sites is also relevant to the Chapter 5.7, "Contaminated Materials," including health and safety measures, contaminated materials management, disturbance of nearby wetlands areas, maintaining structural integrity of the dike and coordination with ongoing remedial investigation. (Tierra)

Response: Comment noted.

Comment 76: There is a discrepancy between the December 2006 Scoping Document and Figures S-1 and S-4 of the Executive Summary. There is a difference between the Swift Interlocking designation between the two documents. (Tierra)

Response: The figure in the 2006 Scoping Document illustrating the location of Swift Interlocking was updated in the FEIS to better represent the actual limits of the interlocking.

Comment 77: The tasks listed in the December 2006 Scoping Document seem to appear to analyze long-term impacts only. There will be significant disturbance of lands adjacent to the Northeast Corridor that are filled with anthropogenic materials including COPR. As such, any activities that disturb the caps or the underlying COPR will have to provide protection for construction workers and nearby property occupants and address appropriate management of disturbed COPR. (Tierra)

Response: The analysis in the DEIS/FEIS includes both short- and long-term effects for each of the affected resource areas.

Comment 78: The EDR report is missing Sites 48, 59, 103, 113, and 131; and correct locations for sites 47 and 58 are provided in an accompanying map. Site 116 is located just north of the Northeast Corridor rather than south of it. (Tierra)

Response: The map in the Appendix has been removed.

Comment 79: FRA should contact USEPA and NJDEP to determine if the siting of the Portal Bridge project would compromise any efforts to remedy the contaminated sites adjoining the project site. (DOI)

Response: Both NJDEP and USEPA are part of the project's Technical Advisory Committee (TAC) and the project has also met with these agencies specifically with respect to the adjacent contaminated sites (e.g., Standard Chlorine, Diamond Shamrock). If a build alternative is selected in the ROD, as the project moves forward into the preliminary engineering phase, more extensive coordination will occur with these agencies particularly NJDEP. The project will continue to coordinate with these agencies on additional studies and investigations to ensure that construction of the selected alternative does not compromise their efforts in the remediation of these sites.

Comment 80: With regards to the preliminary site screening methodology, care needs to be exercised when reviewing and using information in the referenced archived files. In the past there have been many discrepancies, errors, and omissions. (Tierra)

Response: It is recognized that some of the previous studies have limitations that will be addressed during the more detailed studies required under preliminary engineering if a build alternative is selected.

COASTAL ZONE MANAGEMENT

Comment 81: The DEIS does not address the State's revised Coastal Zone Management Rules. (Hudson County)

Response: Chapter 5.8, "Coastal Zone Management," of the DEIS addressed coastal zone policies. The DEIS was published in February 2008 and the NJ Coastal Zone Management Rules were subsequently updated in April 2008. The FEIS has been revised to include the new regulations and analysis in Chapter 5.8, "Coastal Zone Management."

Comment 82: With regards to 7:7E-3.50 (Lands and waters subject to public trust rights) as well as 7:7E-8.11 (Public trust rights), FRA and NJ TRANSIT should comply with the spirit and letter of the Public Trust doctrine and facilitate public access to the Hackensack River waterfront. (Hudson County)

Response: The FEIS has been revised to include the analysis of regulations 7:7E-3.50 and 7:7E-8.11 as they are both applicable to the proposed project.

See responses to Comments 35, 36, 37, 40, and 84 for additional information regarding facilitating access to the Hackensack River waterfront.

Comment 83: With regards to 7:7E-3.40 (public open space), FRA and NJ TRANSIT should take all necessary precautions to minimize the taking and disturbance of parks, open space, and conservation areas within the Project Area, including Laurel Hill Park, and facilitate public access to the Hackensack River waterfront. (Hudson County)

Response: Please see response to Comment 29.

Comment 84: With regards to 7:7E-3.43 (Special urban areas), NJ TRANSIT should take special consideration to treat Hudson County as an "Urban Complex" pursuant to "State Plan." (Hudson County)

Response: Chapter 5.8 "Coastal Zone Management" has been revised to indicate that Policy 7.7E-3.43 does apply to the proposed project. The FEIS has also been revised to describe Hudson County as an "Urban Complex."

Comment 85: Attention should be given to rules 7:7E-6.1 (Rule on location of linear development) and 6.2 (Basic location rule). (Hudson County)

Response: The FEIS has been revised to include the analysis of these two policy regulations. As described in Chapter 3, "Project Alternatives," the project sponsors have chosen the most direct routes possible along the existing transportation corridor in developing alternatives for the proposed project. Since any feasible build alternative must maintain rail service along the Northeast Corridor, the proposed project must use some adjacent parklands and wetlands to develop a set of alternatives that maintains this service. As described in Chapter 5.1, "Land Use and Social Conditions," and Chapter 8, "Section 4(f) Evaluation," the project sponsors would continue to coordinate with Hudson County and NJMC to minimize any potential adverse environmental impacts on public open space and sensitive wetland areas within the study area.

Comment 86: With regards to 7:7E-7.5 Transportation Use rule, FRA and NJ TRANSIT should mitigate public access restraints to the Hackensack River waterfront through the construction of waterfront trails, bike lanes, and footpaths. (Hudson County)

Response: Chapter 5.8, "Coastal Zone Management," has been revised to include regulation 7:7E-7.5, as it does pertain to the proposed project. The project sponsors look forward to working with the County in an effort to

improve waterfront access in the project area particularly in the area of the Hudson County Park at Laurel Hill and along the Hackensack River.

ENVIRONMENTAL JUSTICE

Comment 87: NJ TRANSIT should implement Executive Order 12898 to mitigate all Environmental Justice impacts to Minority Populations and Low-Income Populations. (Hudson County)

Response: The DEIS/FEIS follows the regulations set forth in Executive Order 12898 (see Chapter 5.9, "Environmental Justice"). The chapter analyzes and concludes that the proposed project would not result in any disproportionately high impacts to minority or low-income communities in the study area. While the analysis does recognize that the park at Laurel Hill Park serves the entire Hudson County, that as a whole is 65 percent minority, the adverse impacts on this inaccessible portion of the parkland are not high and disproportionate.

SECONDARY AND CUMULATIVE EFFECTS

Comment 88: The cumulative impacts section should quantify all known and reasonably foreseeable impacts to the wetlands in the Hackensack Meadowlands. It should further quantify expected wetlands losses from other transportation projects, such as the Teterboro Airport Runway Safety project. (USEPA)

Response: The DEIS recognized that there is substantial potential for numerous projects to cumulatively impact wetlands in the Hackensack Meadowlands. However, it would be difficult to provide a quantitative estimate of potential wetland impacts from all of the foreseeable projects in the Hackensack Meadowlands since individual projects are constantly undergoing changes which make any estimate inaccurate relatively quickly. To the extent that this information was available it has been included in the FEIS. However, it should be noted that while some projects are approved with known wetland impacts, others may be in various stages of development or planning and design review. Ultimately, some projects may be terminated while new ones will be announced. The key issue with respect to the cumulative analysis is that while there is substantial development pressure on these valuable resources, there are also mechanisms in place to avoid the types of adverse cumulative effects that normally would have occurred in the past. The special protections afforded the wetland resources in the Hackensack Meadowlands, particularly through the permitting and mitigation process and the oversight by the NJMC and MIMAC are intended to reverse the adverse effects of the past and provide for a

future where compensatory mitigation is provided for the loss of any wetlands. Therefore, it is expected that the Portal Bridge project will be required to provide compensatory mitigation in excess of any loss resulting from construction of the selected build alternative.

Comment 89: Portal is not a precursor to ARC, as it started later and is dictated by ARC. The only benefit to Amtrak from the Portal project is a new bridge which costs approximately $300 million. The rest of the $1.2 billion project elements are all tied into ARC which does not benefit Amtrak. Therefore NJ TRANSIT will have to put up the remaining funds for this project (RRWG)

Response: The benefit to Amtrak is not only a new bridge, which by itself was the impetus for the project, but also improved rail infrastructure from Secaucus Transfer Station to Swift Interlocking. Amtrak will also benefit from the grade separation provided by the duck-under between the Northeast Corridor and the westbound M&E Line as well as the pocket tracks which are intended to segregate to the extent possible the M&E Line traffic from the Northeast Corridor. Furthermore, while Amtrak and NJ TRANSIT share of the project costs has not yet been determined, the cost of the northern bridge and related infrastructure would be more than $300 million.

Comment 90: The Portal Bridge project has no independent utility. The ARC project is putting $1.5 billion of its costs onto Portal. (RRWG)

Response: See responses to Comments 89 and 92. With or without the ARC project, the Portal Bridge project would involve the construction of two new bridges across the Hackensack River. In an independent study conducted by Amtrak in 2005 the costs of two new bridges over the Hackensack River were estimated to be over $1 billion to construct. Therefore, it cannot be said that $1.5 billion of the ARC project costs are being borne by the Portal Bridge project.

Comment 91: Portal Bridge and ARC projects should not be segmented and both projects should be remanded for consolidation as a single project, as it is "impermissibly misleading." A no build option for ARC does not require any additional capacity that would be associated with Portal Bridge. Thereby, ARC appears less expensive than it actually is. (Lackawanna)

Response: Under NEPA, "segmentation" refers to separating an action into discrete elements to avoid or minimize the significance of potential adverse impacts of the entire project. To avoid segmentation, projects are required to demonstrate their "independent utility" from other related or

subsequent projects that the agency may be contemplating or planning. The usual test for "independent utility" is whether or not the project could function and is a reasonable expenditure even if no other additional transportation improvements in the area are completed. As discussed in Chapter 2, "Project Purpose and Need," the Portal Bridge project is intended to solve four distinct issues of the Northeast Corridor's crossing of the Hackensack River. In planning for this future crossing, it is necessary to consider other future actions that may affect the development and ultimate selection of alternatives. It would not be prudent to select an alternative that would be obsolete if another project in the planning process was approved. Therefore, the Portal Bridge alternatives were developed so as not to preclude the ARC project. This obviously affects the design of the build alternatives for the Portal Bridge project but does not connect them into one action. There are many issues that determine why the two projects are separate undertakings, all of which were discussed at length during the Scoping Process for the Portal Bridge project. (Documentation for these discussions can be found under "Scoping Document—Comments & Responses" at http://www.portalbridgenec.com/library.html) These issues include separate goals and objectives, different project termini, separate project owners and different lead federal agencies.

Comment 92: Segmenting the Portal Bridge and ARC projects has enabled NJ TRANSIT and Amtrak to avoid consideration of a Hoboken routing. This is a credible, cost-effective solution that needs to be considered. (IRUM)

NJ TRANSIT claimed the Hoboken alternative as presented by the Institute of Rational Urban Mobility and the Regional Rail Working Group was "outside the scope" of the project, but this is only because the scope was set too narrowly. (Lackawanna)

Response: The Portal Bridge project is intended to address the transportation problems associated with the Northeast Corridor between Secaucus Transfer Station and Swift Interlocking particularly at the crossing of the Hackensack River. It is not intended to address trans-Hudson passenger rail capacity constraints such as that studied by NJ TRANSIT's ARC project. While both projects serve to provide benefits to the same rail passenger community they do so for different parts of the same system. NJ TRANSIT and Amtrak's capital programs have many projects which are intended to serve the same general purpose but have independent utility as in individual piece of the system. Also, see responses to Comments 8, 11, 89, 91, and 93.

Comment 93: If the ARC and Portal Bridge projects truly have independent utility, and the ARC project is not assumed in the Portal Bridge No Build, then there is no apparent use for the Southern Bridge and the Northern Bridge should be adequate to address traffic and reliability issues. (Mukerji)

Response: The first goal of the project is to enhance capacity to meet current and future demand—including new service—along the Northeast Corridor. As one of the objectives in meeting that goal it was determined that at least four tracks should be constructed for the Northeast Corridor across the Hackensack River. That was consistent with Amtrak's long-term goals for the corridor and did not preclude the extension of Northeast Corridor Tracks 1 and 4 from Secaucus to Newark. During the Alternatives Screening Process, it was determined that these four tracks, which ultimately was increased to five (due to requirements for efficient rail operations), should be constructed on two bridges for operational, constructability and redundancy reasons. It was also important that the feasible alternatives not preclude construction of the ARC project as currently planned.

Comment 94: While Hudson County recognizes the benefits of the ARC and Portal Bridge projects, these projects should be mitigated to minimize the impact to the local community and environment. (Hudson County)

Response: NJ TRANSIT and Amtrak look forward to working further with Hudson County on the development and implementation of measures to minimize both short- and long-term impacts of the Portal Bridge project. The project sponsors also recognize the cumulative effects on Hudson County when the Portal Bridge project is considered in conjunction with NJ TRANSIT's proposed ARC project. As disclosed in the DEIS/FEIS, measures to mitigate adverse impacts on parklands, cultural resources and ecological resources within Hudson County have been proposed and will continue to be developed during ongoing coordination and review with the representatives of the county. While the cumulative effects of both projects have been considered in this FEIS, the ARC project is responsible for proposing measures to mitigate the adverse effects which are attributable to it.

SECTION 4(f) EVALUATION

Comment 95: The Department of the Interior (DOI) concurs that there is no prudent and feasible alternative to the proposed use of Section 4(f) properties including the Portal Bridge and portions of the Pennsylvania Railroad Historic District by each of the build alternatives.

The measures to minimize harm to the historic resources must be explicitly consistent with the Memorandum of Agreement developed with the New Jersey State Historic Preservation Office and FRA. A signed copy of that agreement documenting compliance with Section 106 of the National Historic Preservation Act should be included in the final documentation for the project to reflect the procedures for protecting cultural resources determined in consultation with the New Jersey State Historic Preservation Officer. (DOI)

Response: Comment Noted. A signed copy of the MOA for compliance with Section 106 of the NHPA is included in Appendix B.

MISCELLANEOUS COMMENTS

Comment 96: Requests were made to the project contact for supporting information on the costs included in the DEIS. This additional information was not provided. NEPA requires information to be provided to the public so that they can comment. You cannot tell from the summary information how much is just to build the Portal Bridge and its approaches and how much to build the southern bridge. The record will need to remain open until those details are provided. (RRWG)

Response: Additional summary information for the estimates shown in the DEIS have been provided to the commentator.

Comment 97: Bridge design recommendations should be incorporated with cost estimates into the DEIS and there should be the opportunity to present recommendations at a future public hearing. (Wolchuk)

Response: During the preliminary engineering and final design phases of this project, additional evaluations of bridge design (i.e., simple span versus continuous structure, truss versus plate girder, etc.) including the costs and benefits of each type will be conducted. As with every transportation project, the type, size and location of the recommended bridge design will be finalized at the end of the preliminary engineering phase. This recommended bridge design will be presented to the project stakeholders, Amtrak, and NJ TRANSIT, for their evaluation and concurrence.

Comment 98: There has never been a proper MIS for the Portal Bridge study that may have convinced USCG to allow a lower bridge, which would have saved money. (Lackawanna)

Response: A Major Investment Study (MIS) is not required for the proposed project. As a cooperating agency, the USCG is aware of the cost of the

build alternatives. Cost is only one factor in the determination of feasible alternatives of any project and must be balanced with other engineering, operational and environmental considerations in keeping with the project goals and objectives. One of the project goals is to minimize the conflicts with maritime users and maintain the navigable waters of the United States. In recognition of that objective, the vertical clearance for the proposed bridges has been set, in coordination with USCG, at a height which is intended to avoid further reducing the vertical clearance on the river from its current 50 feet.

Comment 99: Regarding page 6-10, Hudson County will have to approve work over the Newark-Jersey City Turnpike. (Hudson County)

Response: Comment noted.

Comment 100: The process basically means that public opinion doesn't count. (Raleigh)

Response: The EIS is being performed in accordance with NEPA requirements. NEPA is a procedural act aimed at ensuring that environmental information is available to the public and public officials before decisions are made and actions are undertaken. Public participation is a requirement of the environmental review process. In addition, NEPA regulations require thorough and complete documentation of participation by all involved government agencies and other interested parties. FRA, as the lead agency, is committed to overseeing this process in accordance with the requirements of NEPA. While the public is afforded the opportunity to participate in the process and comment on all aspects of the work, and public and agency input has contributed to changes in the configuration of the project, the ultimate selection of a preferred alternative is the responsibility of the project sponsors and lead agency. ✷

Chapter 12: List of Preparers

The National Railroad Passenger Corporation (Amtrak) and the New Jersey Transit Corporation (NJ TRANSIT) propose to enhance the capacity and improve the operation of the Portal Bridge, a rail crossing over the Hackensack River in Hudson County, New Jersey. This Final Environmental Impact Statement (FEIS) has been prepared by the Federal Railroad Administration (FRA) and NJ TRANSIT to analyze the potential environmental impacts from the proposed project. FRA is the lead federal agency for this DEIS. The Federal Transit Administration (FTA), United States Environmental Protection Agency (USEPA), and the U.S. Coast Guard (USCG) are cooperating agencies for the environmental review.

Key individuals and firms involved in the preparation of this FEIS are indicated below.

A. FEDERAL RAILROAD ADMINISTRATION (FRA)

David Valenstein

B. NEW JERSEY TRANSIT CORPORATION

Richard Roberts

Responsibilities: NJ TRANSIT Chief Planner

John Wilkins

Responsibilities: NJ TRANSIT Project Manager

Tom Schulze, AICP

Responsibilities: Coordination with the Access to the Region's Core (ARC) Project

Jeremy Colangelo-Bryan

Responsibilities: Planning, Environmental, Section 106 Coordination

Vinny Truncellito

Responsibilities: Financial Control

C. AMTRAK

ENGINEERING

Kenneth Kulick, P.E. – Director, Structures Design

OPERATIONS PLANNING

Drew Galloway – Operations Analysis

Stan Slater – Operations Analysis

D. PORT AUTHORITY OF NEW YORK AND NEW JERSEY

David Widawsky

Responsibilities: Project Oversight

E. ENVIRONMENTAL IMPACT STATEMENT CONSULTANT TEAM

AKRF, INC.

Robert Conway, P.E. – Project Manager

Masters in Civil Engineering. More than 25 years of experience in modeling pollutant fate for transportation projects and project management in NEPA Environmental Impact Statements.

Leslie A. Mesnick – EIS Manager

Masters in Environmental Engineering. Experience in brownfields redevelopment, site remediation, air permitting, wetland and land use permitting, and Environmental Impact Statements.

Julieanne Herskowitz – Social and Economic Conditions

Bachelors in Growth and Structure of Cities. Specializes in the evaluation of land use, zoning, public policy, community facilities, and open space.

Jelena Matic – Air Quality

Ph.D. in Chemical Engineering. Environmental engineer experienced in the analysis of mobile and stationary source air quality environmental impacts.

Benjamin Sachwald – Noise

Bachelors in Mechanical Engineering with Acoustics Concentration. Noise specialist with more than 3 years of professional acoustical consulting experience.

Michael Clayton – Natural Resources and CZM

Bachelors in Entomology and Applied Ecology. Over ten years experience with the preparation of state and federal environmental permit applications.

Shawn Shotzberger – Natural Resources and CZM

Bachelors in Marine Science. Over ten years experience with the preparation of state and federal environmental permit applications.

Mei Mei J. Lee, AICP – Natural Resources, CZM, Contaminated Materials, and Construction Impacts

Bachelors in Natural Resources. Experience in transportation planning, preparation of state and federal environmental permit applications, and Environmental Impacts Statements.

Molly R. McDonald, R.P.A. – Visual, Historic and Archaeology

Masters in Buildings Archaeology and Historic Preservation. Specializes in history, archaeology, and the analyses of urban design and aesthetic considerations.

A. Michael Pappalardo, R.P.A. – Visual, Historic and Archaeology

Bachelors, Anthropology. Almost 20 years of experience in archaeology and cultural resource management as a professional archaeologist.

FIGG BRIDGE

Garrett G. Hoffman, P.E.

Master of Science in Civil Engineering. Over 14 years of design and project engineering experience on rail and highway bridge projects from the environmental studies phase through final design and construction engineering support.

W. Jay Rohleder, Jr., P.E., S.E.

Master of Science in Civil Engineering and MBA. Over 25 years of design, project management and agency coordination experience on rail and highway bridge projects from the environmental studies phase through final design and construction engineering support.

Jose M. Rodriguez, P.E.

Master of Science in Civil Engineering. Over 24 years of design, project management and agency coordination experience on rail and highway bridge projects from the environmental studies phase through final design and construction engineering support.

D. Brice Urquhart, P.E.

Master of Science in Civil Engineering. Over 13 years of design and project engineering experience on rail and highway bridge projects from the environmental studies phase through final design and construction engineering support.

GANNETT FLEMING

Richard Cross, P.E.

Bachelors in Civil Engineering. 30 years experience and is responsible for railroad, transit, and highway design; facility and rail yard design; land surveying; right-of-way plans; stormwater management; and utilities.

Greg Nazarow

Bachelors in Mechanical Engineering, Masters in Business Administration. Over 20 years experience in evaluating issues relative to existing capacity and requirements, operational constraints, line, railyard and station configuration, and right-of-way and signal system improvements. He is proficient in developing network operations simulations to test rail operating plans and physical plant modifications.

John F. Legath, Jr., P.E.

Bachelors in Civil Engineering. Almost 20 years experience and is responsible for track and civil design including the preparation of plans, specifications, and estimates for track, earthwork, drainage, soil erosion and sedimentation control, and other civil design of highway and transit facilities.

John F. Samean

Associates in Specialized Technologies. More than 27 years of experience and manages signal design and rail operations planning.

John Goddard, Jr.

Associates in Architectural Technology. Expertise in civil and track design, and is primarily responsible for horizontal and vertical alignment design, profiles, cross sections, and track details for preliminary and final construction drawings.

HOWARD/STEIN-HUDSON ASSOCIATES

Maura Fitzpatrick – Project Manager, Public Involvement

Masters in Public Administration. Over 20 years experience in policy analysis, public involvement programs, meeting facilitation, organizational management and preparation of Environmental Impact Statements.

Christie Marcella – Public Involvement

Masters in Urban Planning. Experience in transportation and land use planning, public involvement activities and preparation of Environmental Impact Statements.

Melissa Budsock – Public Involvement

Bachelors in Marketing. Experience in government and logistical coordination of public outreach on major transportation projects in the region including the ARC project.

MODJESKI AND MASTERS

Leon K. Huang, P.E.

Bachelors in Civil Engineering. Over 25 years of wide-ranging experience in various aspects of complex bridge design and analysis, including preliminary studies through detail design and construction monitoring.

Kevin Johns, P.E.

Masters in Civil Engineering. Almost 10 years experience in the design and detailing of new structures and rehabilitation of old structures.

PRESTIGE ENVIRONMENTAL

Xerxes Antia, P.E., Contaminated/Hazardous Materials

Bachelors in Civil Engineering. Almost 25 years experience in environmental science and geotechnical engineering, specializing in hazardous waste screening, implementing soil and groundwater investigations and remedial cleanup activities.

RADIN CONSULTING

Chitra Radin

Bachelors in Political Science. Over 20 years experience in the preparation of environmental impacts analyses, agency coordination and manager of large-scale transportation projects.

Michael Ashby

Masters in Environmental Geochemistry. Expertise in the development of environmental documentation and GIS mapping for the preparation of environmental impacts analyses.

Jennifer Baer

Masters in Public Administration. Over 20 years experience in the preparation of environmental impacts analyses, agency coordination and public involvement activities.

Jane Darcy

Masters in Urban Planning. Experience in land use and transportation planning as well as public involvement development and execution.

Maria Rallis

Bachelors in Environmental Sciences. Assists in the preparation of environmental documents for state and federal regulations.

REICHMAN FRANKLE, INC.

Rose Reichman

Masters in English. Thirty years experience in development and implementation of marketing communications and public outreach programs and materials.

Connie Reynolds

Masters in Business Administration--Marketing. Twenty-five years experience in technical writing and marketing communications for public and private clients including large-scale transportation projects.

ROBINSON AERIAL SURVEYS

Kurt J. Lutz - Project Manager, Topographic Mapping

Bachelors in Aeronautical Science. Over 20 years experience in aerial data acquisition, remote sensing, spatial data analisys and photogrammetric map production ✴

Chapter 13: List of Agencies, Organizations, and Persons to Whom Copies of the FEIS Were Sent

This Final Environmental Impact Statement (FEIS) has been widely distributed and is available for review at libraries and other locations – see a list of viewing locations below in Section B. Copies of the document, its Executive Summary, or a notification of availability of the FEIS were distributed to a more than 550-person mailing list, including those listed below.

A. LIST OF NOTIFIED PARTIES

FEDERAL AGENCIES

Advisory Council on Historic Preservation (ACHP)
U.S. Army Corps of Engineers (ACOE)
U.S. Department of Commerce, National Marine Fisheries Service (NMFS)
U.S. Department of Homeland Security, Coast Guard (USCG)
U.S. Department of the Interior, Fish and Wildlife Service (USFWS)
U.S. Department of Interior, Office of Environmental Policy and Compliance (USDOI)
U.S. Department of Transportation, Federal Transit Administration (FTA)
U.S. Department of Transportation, Federal Railroad Administration (FRA)
U.S. Department of Transportation, Federal Highway Administration (FHWA)
U.S. Environmental Protection Agency (EPA)

NEW JERSEY STATE AGENCIES

New Jersey Department of Community Affairs, State Planning Commission
New Jersey Department of Environmental Protection (NJDEP)
New Jersey Department of Homeland Security and Preparedness
New Jersey Department of Transportation (NJDOT)
New Jersey Meadowlands Commission (NJMC)
New Jersey Historic Preservation Office (NJHPO)
New Jersey Turnpike Authority
North Jersey Transportation Planning Authority (NJTPA)
Port Authority of New York and New Jersey (PANYNJ)

LOCAL AGENCIES

City of Newark
Essex County Department of Economic Development, Training, & Employment
Essex County Transportation Advisory Board
Hudson County Division of Cultural Affairs and Tourism
Hudson County Economic Development Corporation
Hudson County Division of Planning
Hudson County Engineering

Hudson County Improvement Authority
Hudson Transportation Management Agency
Jersey City Division of City Planning
Jersey City Department of Housing, Economic Development and Commerce
Kearny Department of Public Works
Newark Department of Engineering
New York Metropolitan Transportation Council
Secaucus Department of Engineering

ELECTED OFFICIALS

NEW JERSEY

U.S. Senator Frank Lautenberg
U.S. Senator Robert Menendez

U.S. Representative Steven R. Rothman, District 8
U.S. Representative Bill Pascrell Jr., District 9
U.S. Representative Donald M. Payne, District 10

New Jersey State Governor, Jon S. Corzine

New Jersey State Assemblymember Vincent Prieto, District 32
New Jersey State Assemblymember Joan Quigley, District 32

Mayor Wayne Smith, Irvington
Mayor Alberto G. Santos, Kearny
Mayor Cory A. Booker, Newark
Mayor Dennis Elwell, Secaucus

Essex County Board of Chosen Freeholders

Joseph DiVincenzo, County Executive
D. Bilal Beasley, Freeholder
Ralph R. Caputo, Freeholder
Carol Y.Clark, Freeholder
Samuel Gonzalez, Freeholder
Johnny Jones, Freeholder
Linda Lordi Cavanaugh, Freeholder
Donald P. Payne Jr., Freeholder
Patricia Sebold, Freeholder
Blonnie R. Watson, Freeholder

Hudson County Board of Chosen Freeholders

Thomas A. DeGise, County Executive
Albert Cifelli, Freeholder
Jeffrey Dublin, Freeholder
Maurice Fitzgibbons, Freeholder
Gerald Lange, Freeholder

Thomas Liggio, Freeholder
Doreen McAndrew DiDomenico, Freeholder
William O'Dea, Freeholder
Tilo Rivas, Freeholder
Eliu Rivera, Freeholder

OTHER NEW JERSEY ELECTED OFFICIALS

Carol Jean Doyle, Councilwoman, Kearny

SECTION 106 CONSULTING PARTIES

East Coast Greenway Alliance
Jersey City Landmarks Conservancy
New York/New Jersey Baykeeper

MAJOR INSTITUTIONS, COMMUNITY GROUPS, AND INTEREST GROUPS

Alliance for Action, Inc.
Associated General Contractors of New Jersey
Auto Free New York
Brotherhood of Maintenance of Way Employees
Lackawanna Coalition
Meadowlands Regional Chamber
New Jersey Association of Railroad Passengers
Regional Rail Working Group (RRWG)
The Regional Plan Association

LOCAL BUSINESSES, PROPERTY OWNERS, AND PROPERTY MANAGERS

Diamond Shamrock/Tierra Solutions
Hudson County Chamber of Commerce
Jana Corp
Meadowlands Chamber of Commerce
Meadowlands Conservation Trust
Orangewood Properties
Professional Environmental Systems
Regional Business Partnership
Tri-County Chamber of Commerce
Secaucus Brownfields Redevelopment, LLC
West Hudson-South Bergen Chamber of Commerce

UTILITY COMPANIES

Bergen County Utility Authority
Public Service Energy and Gas (PSE&G)
Jersey City Municipal Utilities Authority

Any member of the public who has attended at least one meeting of the project's Regional Citizens' Liaison Committee (RCLC) has also received a copy of the FEIS in CD format. Additionally, a copy of the FEIS was sent to all those who provided comments on the DEIS.

B. PUBLIC VIEWING LOCATIONS

WEBSITE

www.portalbridgenec.com

GOVERNMENT OFFICES

NJ TRANSIT
One Penn Plaza East
Newark, NJ 07105

LIBRARIES

NEW JERSEY

Kearny Public Library
318 Kearny Avenue
Kearny NJ, 07302

Newark Public Library
5 Washington Avenue
P.O. Box 630
Newark, NJ 07101

Secaucus Public Library
1379 Paterson Plank Rd
Secaucus, NJ 07094

Jersey City Public Library
472 Jersey Ave
Jersey City, NJ 07302

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